Smithsonian

May 1991

Acrobatic armadillo comes from a fanciful menagerie by Oaxaca woodcarvers (p. 118)

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May 1991

Smithsonian

Volume 22, Number 2

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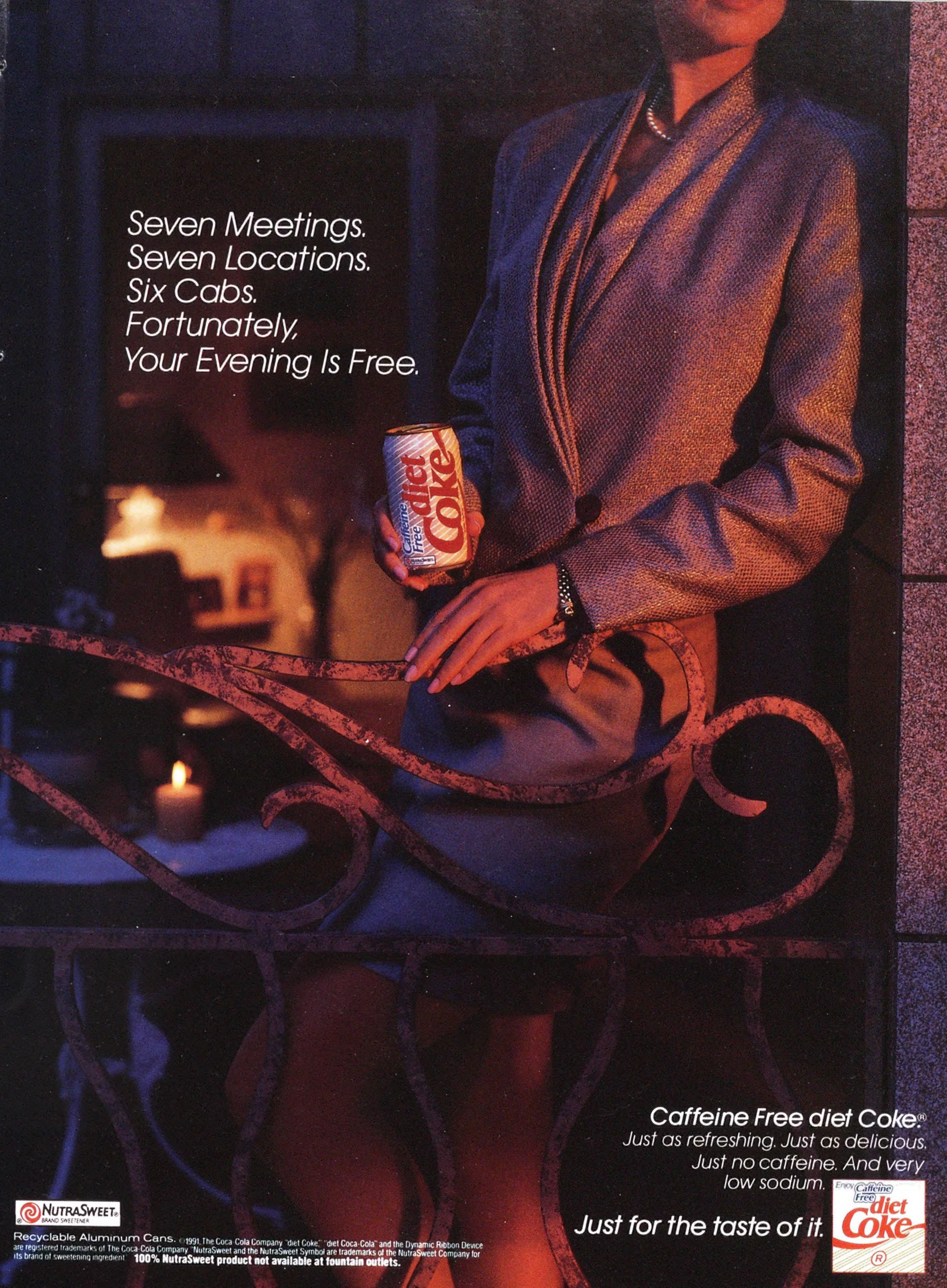

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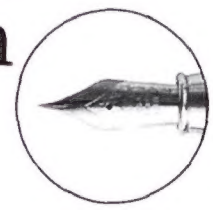

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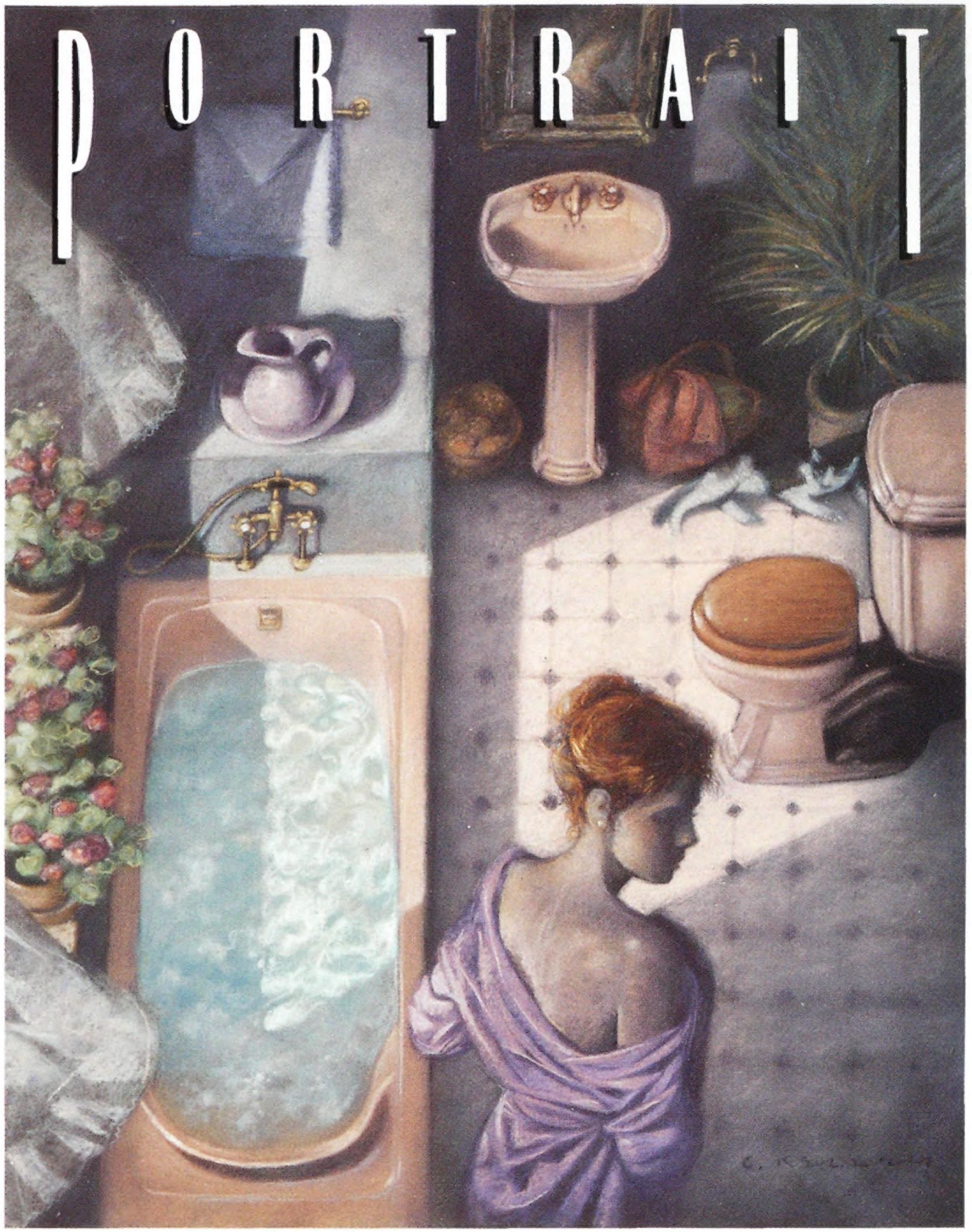

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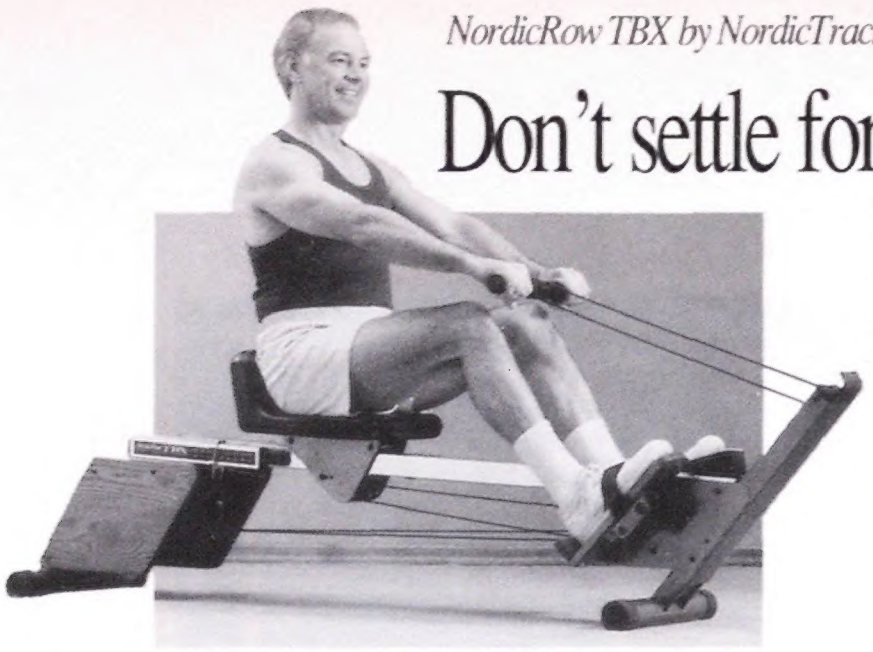

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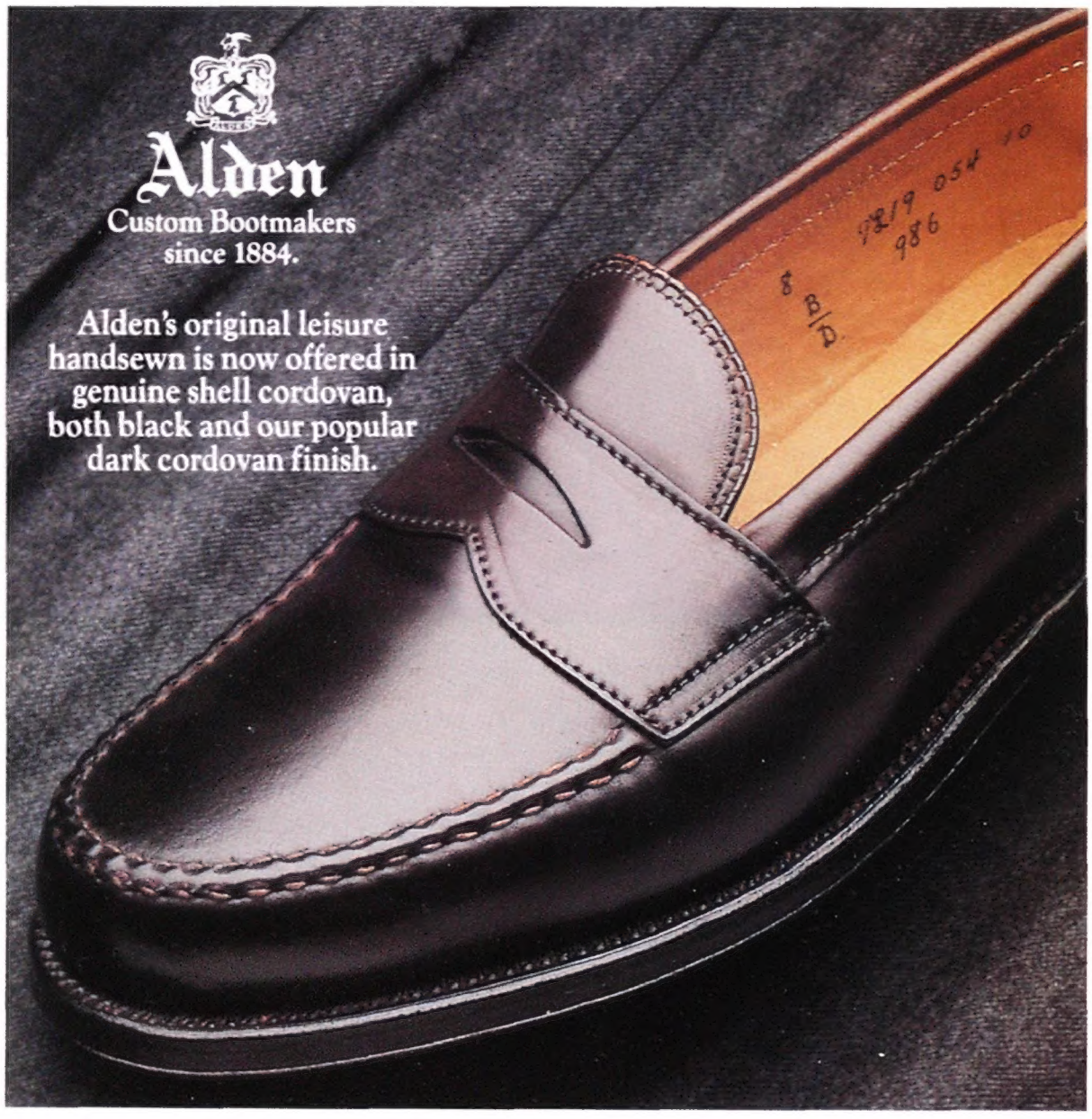
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Smithsonian horizons

Molecular biology, in revolutionizing the whole science of life, has also had an impact on studies of evolution

The public image of the scientist has something in common with Captain Ahab, self-absorbed in unremitting pursuit of his redemption or nemesis. Sometimes it is that way. But most scientific activity does not consist of stubborn failures or new and wholly unexpected discoveries within relatively isolated fields of inquiry. It is better likened to a multihued and textured fabric whose inherent patterning becomes apparent only over time. Fabric that is both complex and durable ordinarily has to be laboriously woven out of many delicately intertwined strands—bold theories, new methods and critical experiments (never uniformly successful)—at the hands of many investigators.

Consider the whole course of the evolution of life on Earth. It is natural and compelling to ask: Has the introduction and modification of new species tended to be a relatively constant process, responding slowly to adaptive pressures, or have there instead been long, static periods of equilibrium that are punctuated by abrupt transitions? Few themes in science can have wider theoretical resonances than this one. So it is no surprise that "punctuationists" like Stephen J. Gould have more than held their own in the recent vigorous controversy among evolutionary biologists.

But an intuitively reasonable position is one thing, and a detailed and generally convincing demonstration of its broad applicability quite another. Mostly because of deficiencies in the evidence, the latter has long remained elusive. To begin with, there have always been huge gaps and uncertainties in known sequences of fossil-bearing strata. What can assure that we are following a single line of descent and not confusing several? And if the tempo of change is the nub of the question, how accurately can absolute (or even relative) dates be assigned to fossils found in unrelated, geographically dispersed deposits?

Further difficulties were inherent in the only available methodology. Already highly developed in the time of Darwin, comparative morphology—dealing with the form and structure of organisms—has been the traditional means of reconstructing the relationships between living species, as well as their phylogeny, or evolutionary history, and probable time of divergence from a line of common ancestors.

While the main outlines of phylogeny have been long and well established in this way, there remains a speculative element in verifying and specifying more detailed relationships. For a given similar feature, it is not always possible to distinguish on the basis of form alone whether it is a homology, and thus evidence of common ancestry, or possibly only an analogy suggestive of independent evolutionary trends that happen to have had a common direction or similar outcome.

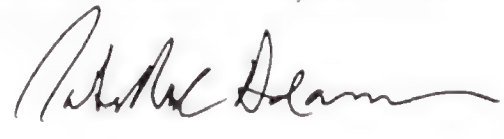
Now powerfully assisting in efforts to unlock this seemingly intractable question is a broad scientific advance from a different direction. Molecular biology, in revolutionizing the whole science of life, also has an impact on studies of evolution. Its findings and methods were resisted at first by classical morphologists, and lingering antagonisms persist even though the results of the two approaches have turned out to be broadly congruent and thus mutually supportive.

Variations in proteins, immunological responses and sequences of nucleic acids provide a basis for quantitatively assessing the degree of divergence, and thus implicitly the length of separation, between species. The number of features potentially available to be compared and given a relative "dating" on this molecular basis is almost unlimited, so that presently it is likely to be favored over the morphological approach for many purposes. But in other respects the two serve different, complementary objectives, assuring a continuing place for both. Only the paleontological record of fossil forms, for example, can be unambiguously linked to securely dated geological deposits.

With unparalleled systematic collections in the National Museum of Natural History, the Smithsonian has been in some respects a bastion of classical morphology. However, we have recently opened a laboratory of molecular systematics at our Museum Support Center; another has just begun operations at the National Zoo. Still a third is up and running at the Smithsonian Tropical Research Institute in Panama.

To take a single example among many, Jeremy Jackson and Alan Cheetham, studying living as well as fossil forms of some marine animals called Bryzoa, are lending new empirical support to the punctuated-equilibrium model of evolution. To do so, they have depended on molecular studies of living forms to show that skeletally distinguishable forms are identical with genetically distinguishable species. Then both fossil and living forms can be assigned to the same species, and the sequence of fossils of the species provides a basis for identifying the tempo of evolutionary changes within it.

And so the fabric slowly advances.



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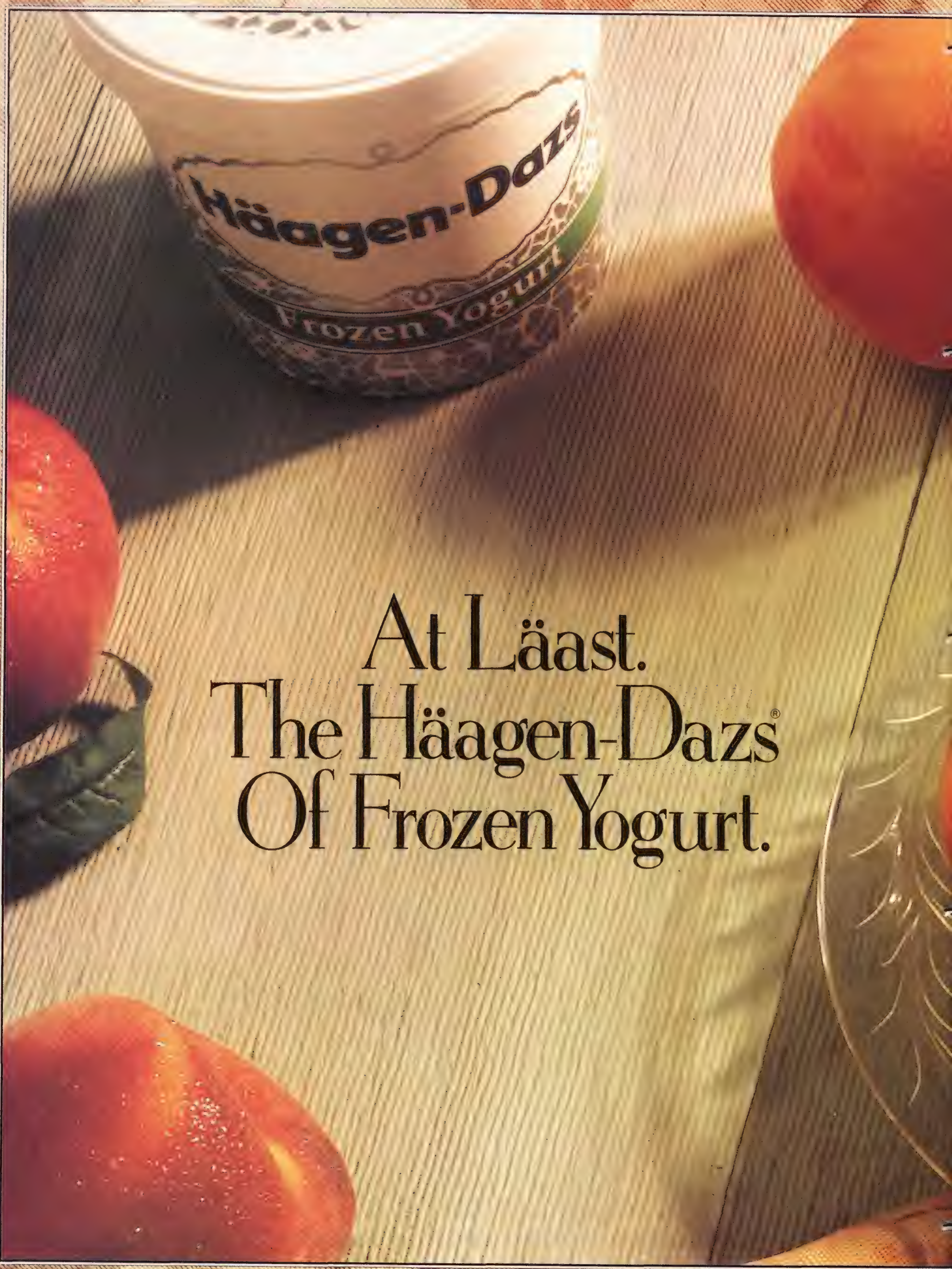

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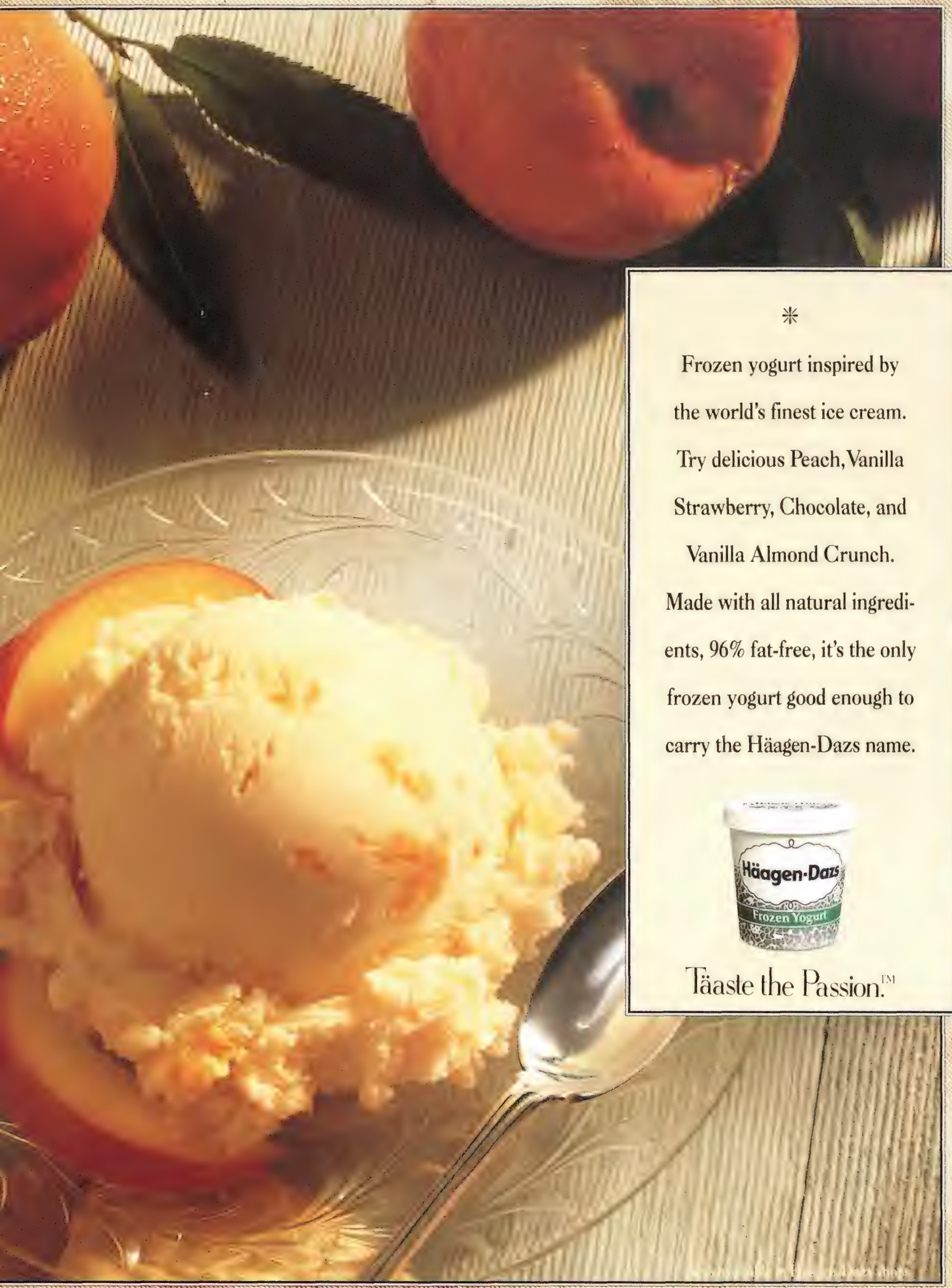

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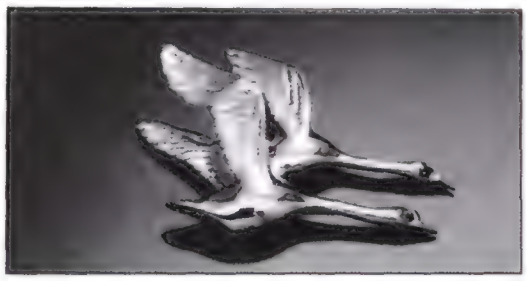

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Letters to the Editor

Coyotes

Dear Sir: Referring to your March article, my fellow hikers and I spent one night on the Appalachian Trail in Massachusetts in May 1975, next to a crystalline pond under clear skies and a full moon. We were in campers' paradise and didn't believe life could be much sweeter—until the serenade began.

We had no idea there were coyotes in New England, and the howling was nothing like the mournful sound I had heard only in the movies. Our merry band of tenors sang for us on and off through the night, in a full circle of the hills around the pond and our camp.
Phillip Michael Cantore
Shelton, Connecticut

Dear Sir: For several years our desert had a Predator Control Officer so efficient that eventually no coyotes were left anywhere in the area.

One day somebody from Washington came around, checking. A rancher told him gophers were ruining his pasturage, and that he'd had to destroy a horse because it broke a leg in a gopher hole.

The Washington solution? Import coyotes from Oregon.
Frances Lowry
California City, California

Dear Sir: Early on a Sunday morning, I was driving my pickup south on Interstate 91 in Vermont. About 100 yards ahead of me a coyote came out of the brush at the right of the road, paused, looked toward me, clearly decided he had plenty of time, then loped across the highway to the median. He stopped at the far side, looked again, and then continued his lope.

In both crossings of that 65 mph highway, he looked *only* in the direction from which traffic would come.

It was a slick performance, executed with grace and confidence. I've seen adult humans who didn't do nearly as efficient a job of transiting a roadway.
Janice S. Aitken
South Royalton, Vermont

The National Gallery of Art

Dear Sir: The Gallery's West Building is one of the most sophisticated in the hemisphere, subtle in conception and flawless in execution. It never dulls with familiarity; it answers for all time those who think that classical architecture is insipid or inflexible.

Even if there were not a painting inside, even if it were completely empty, John Russell Pope's National Gallery would still be a rich, exhilarating museum of architecture, a masterpiece rewarding repeated visits and detailed study.
Kevin Orlin Johnson
Washington, D.C.

Dear Sir: I'll bet dollars to doughnuts that lovers of Dutch and Flemish art winced as I did when they read the caption on page 55 stating that visitors bathed in the glow of Van Dyck masterpieces. The photograph does not show a single Van Dyck. The visitors are looking at paintings by Frans Hals.
Seymour Slive
Cambridge, Massachusetts

Germany before nationhood

Dear Sir: The 1813 war that defeated Napoleon was popularly called the "War of Liberty" (*Freiheitskrieg*). Its aim was not only liberation from the French, at that time occupying large parts of Germany, but also liberty at home, freedom from oppression. The kings and princes substituted "Liberation" (*Befreiung*) for "Liberty," which they did not want to grant their subjects.
Peter C. Loewenberg
East Hartford, Connecticut

Dear Sir: The caption beneath the middle photograph on page 92 is incorrect. The correct title of the second emperor of Germany is Kaiser Friedrich. He was the first and only kaiser by that name. His other title was Koenig Friedrich III of Prussia.
Philip Halpern
Jacksonville, Florida

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Dear Sir: Martin Luther's positions changed not only religion (including Catholicism) but also the entire world. Would that all of us could exert such a powerful—and positive—benefit on humanity. His place in history is secure.
Eberhard E. Fuhr
Palatine, Illinois

Dave Henderson

Dear Sir: The poverty of the Yale imagination is nicely documented in your piece on the spurious eight-year career of one Dave Henderson.

Contrast this with the fraudulent saga of one L. Donovan Bisbee, confected by members of Harvard's Class of 1935 and sustained for 50 years. "Bisbee" made his formal appearance, complete with picture and forged credentials, in the Class of 1935 senior yearbook. Thereafter, the class secretary regularly "reported" on his "activities" in each quinquennial anniversary volume (except, I believe, during World War II).

This monstrous jape reached its apotheosis in six and one-half pages embedded in the 25th-anniversary report (1960). Mercifully, by 1985 Bisbee had disappeared into a "black hole."

Henderson, indeed!
William W. Wright
Baltimore

Dear Sir: The saga of Dave Henderson (Yale '43) brings to mind another famous phony: Peter Mathews, the *Time* writer who never was. Briton Hadden (Yale '20), the fun-loving cofounder (with classmate Henry R. Luce) of the magazine, placed Peter on the masthead in 1924. He lasted 36 years, six times as long as arch-hedonist Dave Henderson.

Legend has it that Peter's function was strictly passive: he was there to be fired whenever an angry reader or advertiser had to be appeased, and he could be restored to the masthead after the storm blew over. I believed the story during the 17 years I worked for *Time*, and so did everyone I knew.

The trouble is nobody was ever able to point to an occasion when Peter Mathews was banished for cause. The late T. S. Matthews (two *t*'s, please), who spent 24 years on *Time*, including six as managing editor, wrote in his autobiography that Peter Mathews was "a scapegoat for emergencies" but never had to be fired.

In the 1930s the magazine began to publish a droll column called "Miscellany," wherein almost anything was likely to be pinned on Mathews. Cartoonist Al Capp invented a mythical state called Lower Slobbovia in 1947; *Time* sent correspondent Peter Mathews to report on it and its slovenly inhabitants. He reported that the Baltic people often swam nude in the Gulf of Riga, the men early in the morning, women later. Who, a reader wanted to know, saw to it that the early bathers didn't overstay their allotted time? The editors' answer: "Peter Mathews."

His ignominious end was his firing by Managing Editor Otto (The Iron Chancellor) Fuerbringer (Harvard '32) on April 18, 1960.
Robert Sherrod
Washington, D.C.

Dear Sir: In the early 1950s, Kays Gary, human-interest columnist for the *Charlotte Observer*, began receiving and publishing a series of letters from a re-

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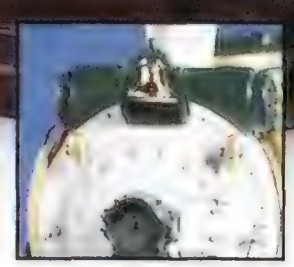

The smokestack juts forth from the smokebox, and the polished brass bell heralds the arrival of the train.

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tired Dutch sea captain in South Africa, seeking aid in locating kin of the captain's deceased wife. She had been a native of Catawba County, within the paper's readership range, when the two met, romanced and married at a Carolina beach. Her untimely death prompted the search, and a diligent effort over weeks and miles by Gary to assist the bereaved Captain R. E. Hellek. He had everyone in the county trying to find the old man's relatives.

Then one day Gary, musing on the total lack of leads, took a hard look at the signature. R. E. Hellek . . . eureka! Spell it backward. Kelleher! The insurance man next door, Don Kelleher, enlivening his prosaic occupation.

The real Dave Henderson
Charlotte, North Carolina

Ferdinand Magellan in a 1575 fresco.

Around the Mall and beyond

Dear Sir: In the summer of 1944, when I was in primary flight training at Orangeburg, South Carolina, a P-47 landed at our little grass airstrip one day just before dusk. The strip was sized for our Stearman PT-17s, but that pilot got his monster down and stopped before he ran into the trees. He was black, with the rank of lieutenant in the Army Air Forces.

Rodney Kittel
Seattle

Dear Sir: During two tours of duty at Eglin Field Air Base in Florida, I became aware of the Tuskegee pilots.

Both times, I noticed that their achievement scores, posted conspicuously on the bulletin board, were way over and above our best.

I knew these pilots were going to give the Luftwaffe all kinds of hell.

Benedict Goldsmith
Rockland, Maine

Phenomena, comment and notes

Dear Sir: California has no Salinas County; Salinas is a town in Monterey County.

Clari Reed
San Jose, California

Magellan

Dear Sir: In explaining that the text of your April article on the Captain-General [right] was adapted from Simon Winchester's book *The Pacific*, the publisher was listed as Hutchison. That was true only for England, where the book first came out. In the United States, it is called *Pacific Rising*, as it is a wide-ranging account of the rapid evolution of the Pacific world, especially in the last decade or so. Under that title it has just been published in the United States by Prentice Hall ($24.95), and is in bookstores everywhere.

Paul Aron, Executive Editor
Prentice Hall Publishers
New York City

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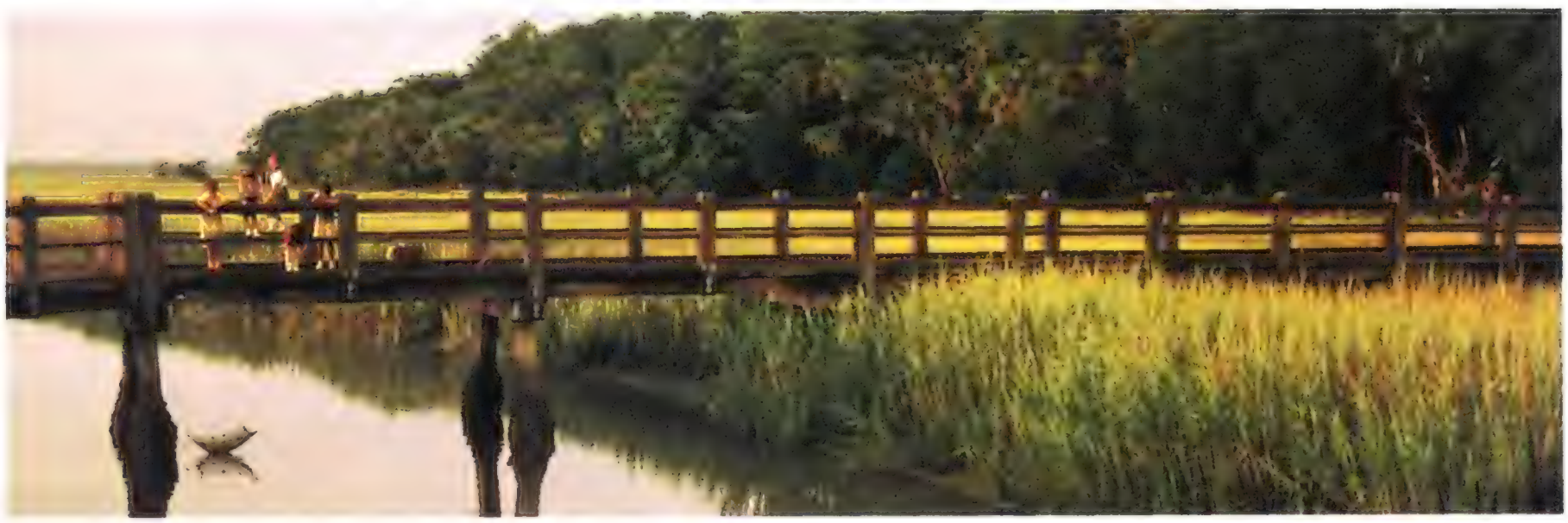

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While Canada's Pacific coast is still undiscovered by many of this world, our native peoples have been entertaining visitors for centuries.

The Raven beat his wings, in perfect rhythm, until he had formed our world out of nothing at all. And marked the beginning of life as we know it.

The most revered of spirits and master of ceremonies, the Raven embodies what this land is today. Magic.

For here the supernatural abides in all that is living.

The mountaintops and salmon streams. The mighty rainforests. The towering cedars, clover meadows and subtle scent of blossoms. The deer, the bear, the seal – the creatures that are the Animal People.

And our link to another realm.

Taking wing with what seemed to be a small berry in his beak, Raven ascended into the thick black sky. With but a quick flick of his head he cast out the sun, unveiling all he had created in a wave of daylight.

Surely, it's for these very good reasons so many of our native peoples, like the Tsimshian, the Tlingit, the Haida, all chose to settle here. And still the beating rhythms of unchanged rituals pay tribute to everything that made it a reality.

Now, if all this stirs the spirit of adventure in you and your kind, please, be our guest.

Experience the strength of our homage in the totem poles that have long stood the test of time.

Or in museums and galleries thousands of years in the making.

Vancouver, Canada's third largest urban centre, stakes its roots with a park the size of some cities. Architectural designs – like 'Canada Place' – echo its mountainous backdrop. While our many cultures add their own vari-

meet such interesting souls.

ations on the performing arts.

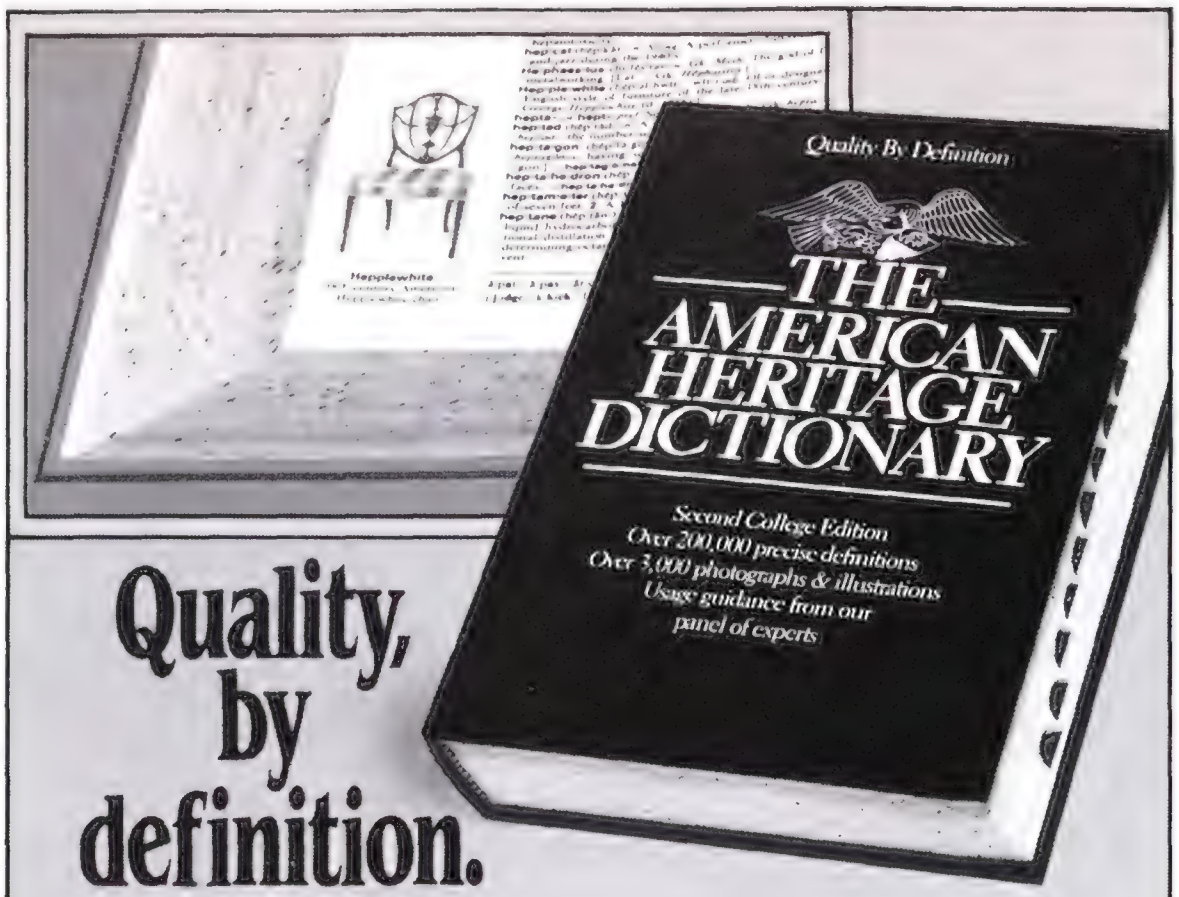
And thank heaven for the ocean. Yes, the Whale, the Sea Otter and the like still play. But in harmony with cruise ships, ferries, sailboats, seaplanes – and one floating symphony.

On Canada's west coast. Because, when life itself is inspiration, you never know whom you might meet.

And from high overhead, the Raven smiles.

Canada

The World Next Door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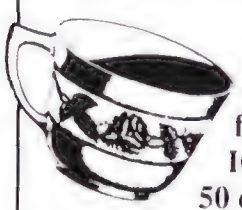

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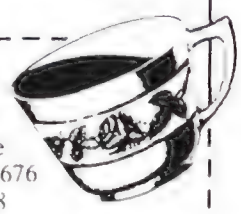

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Around the Mall and beyond

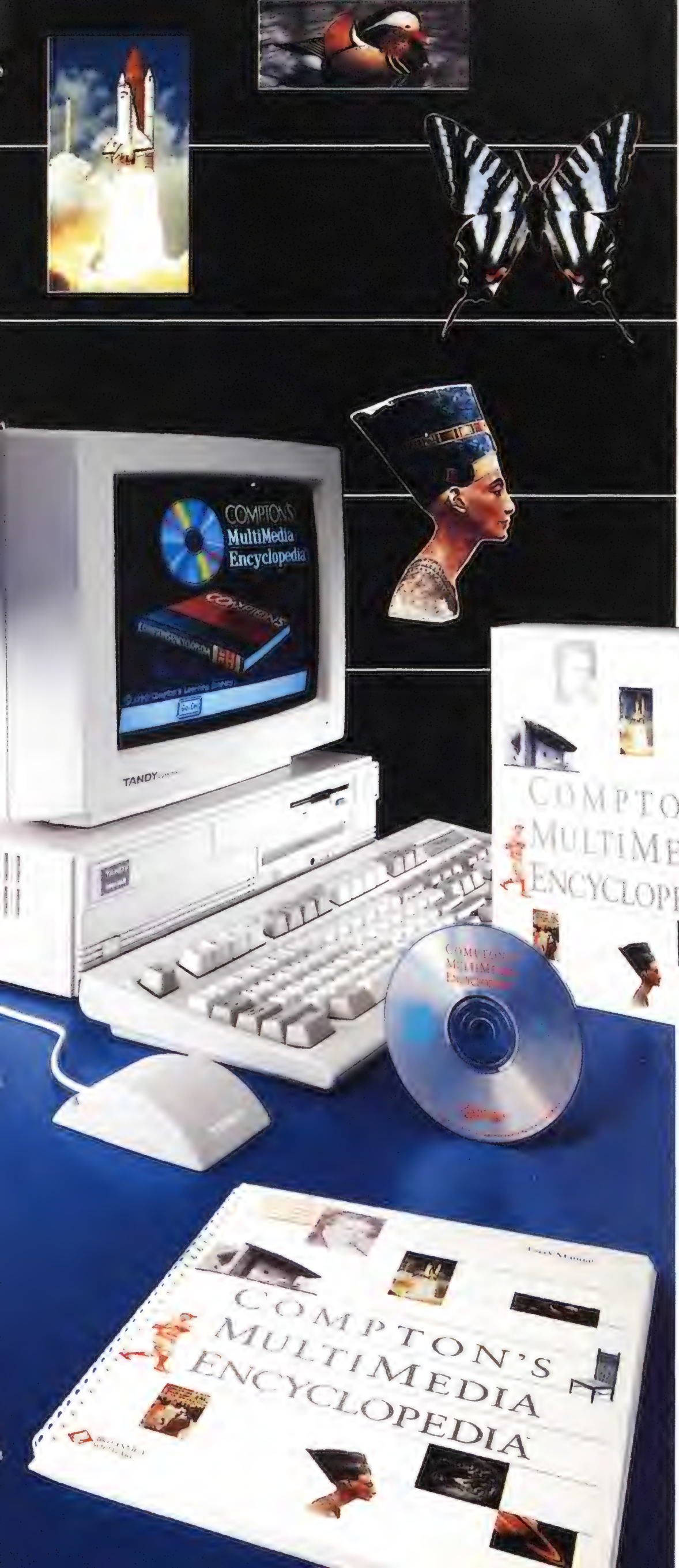
It's a grungy old piece of oak, more than six feet long, blackened by age, shattered, rotted, yet still too heavy to be moved without a grunt or two. But that didn't stop Qantas from flying it halfway around the world recently, from Newport, Rhode Island, to Sydney, Australia, free of charge.

Why the VIP treatment? Because that old piece of wood is the remains of the sternpost of the ship *Endeavour*, the vessel on which Lt. James Cook explored the east coast of Australia in 1770. The ship later became a whaler, was sold to an American syndicate, then suffered damage in Newport and lay at a wharf until she was vandalized and cannibalized for other ships. The sternpost finally found safe haven at the Newport Historical Society, for it's a precious fragment of history.

But since Cook is Australia's Columbus, this piece of the *Endeavour* belongs in a suitable Australian museum. And by the end of this year, that's where it will be—the icon of icons for the new Australian National Maritime Museum.

Since its founding, the Smithsonian has been, inevitably, a major consultant for new American museums. After all, part of our purpose is to share knowledge. Overseas museums, too, often tap our expertise, as has this new Australian venture. We've conferred with its planners and lent it material. That's why I'm able to include it in this column. It's beyond the Mall. Way beyond. But still in the ballpark.

The building is already finished and thrusts its giant white roof ten stories high beside Darling Harbour, one of the many small coves that add fascination to Sydney's waterfront. The structure approaches our National Air and



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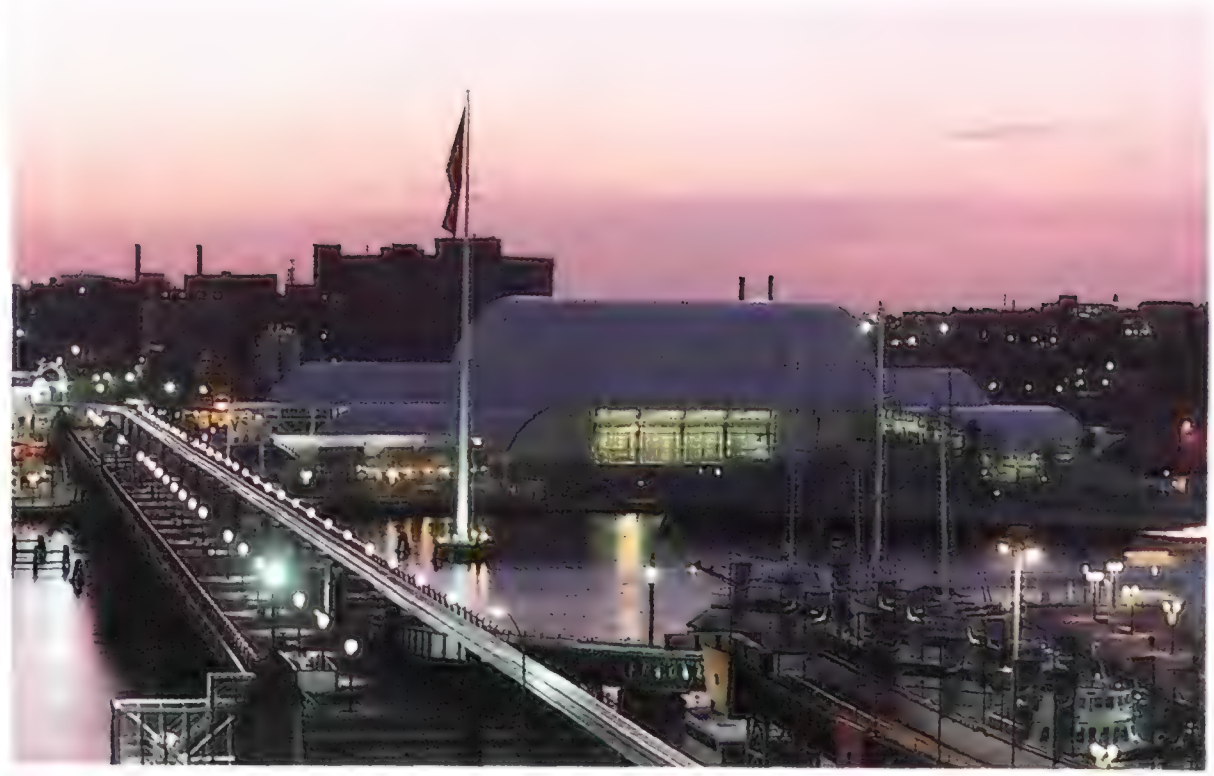


The new, ten-story-high Australian National Maritime Museum in Sydney will tell the seafaring saga of the "great brown land."

Space Museum in scale, and one gallery is almost 50 feet taller, an uncluttered ceiling held aloft by curved, tubular steel girders. From the outside, the arced roof echoes the soaring effect of the *Australia II*, the 12-meter sloop that for the first time ever wrenched the America's Cup away from the United States. She'll fit in the tall gallery, mast and all. "The sails will be set," said museum director Kevin Fewster, "and we'll tilt the vessel a little to let them fill naturally, instead of drooping."

Although other full-size vessels will also go on display here, there'll still be ample room for smaller items like the oldest exhibit, a Dutch celestial globe dating from 1602, the first to show southern constellations, including the Southern Cross. Artworks and all kinds of nautical minutiae will also be on view. For starters, some 2,000 things will be featured.

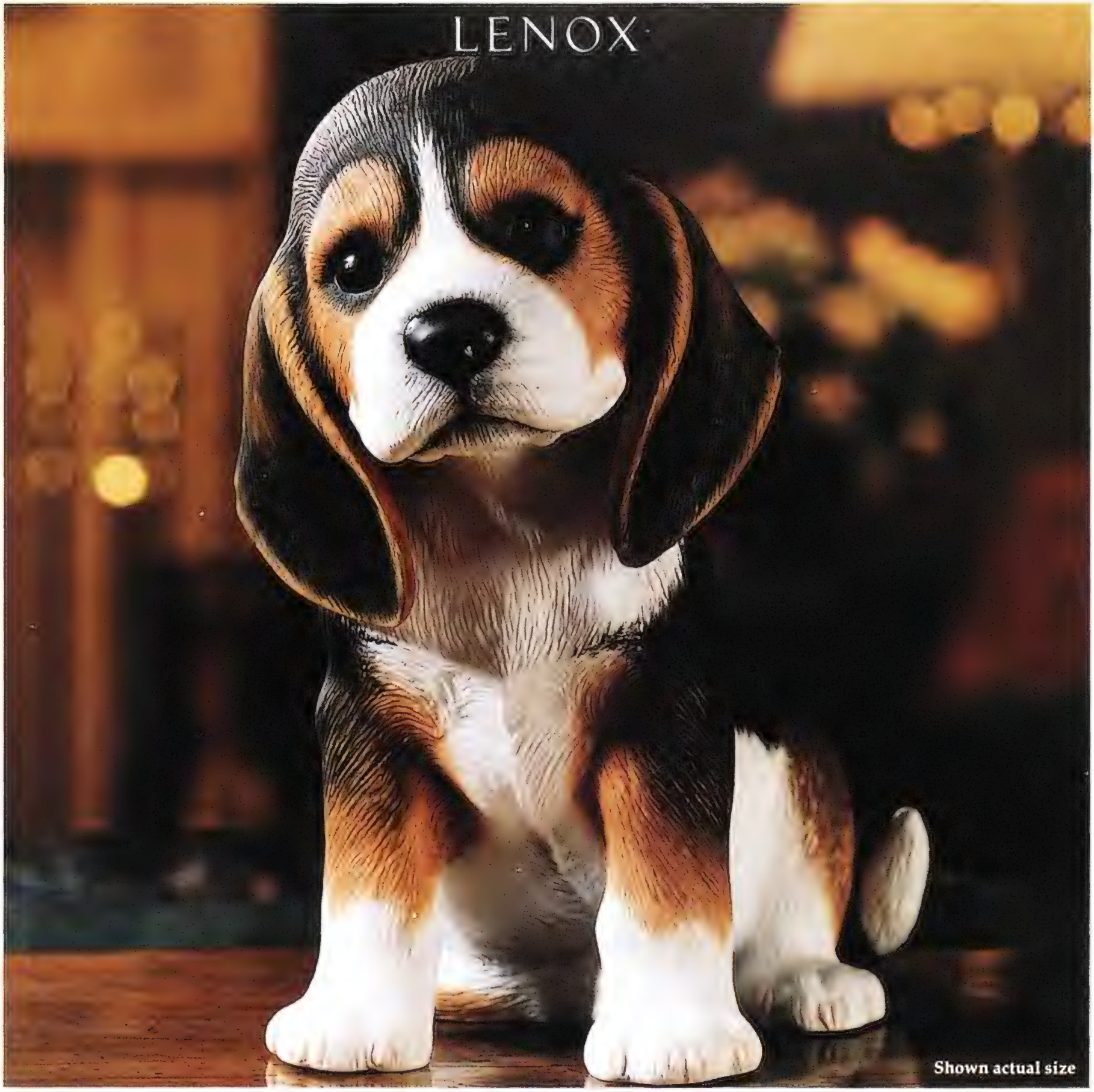
Like every New Englander, I have a genetic interest in the sea, and can never log enough hours in American maritime collections at such places as Mystic, Connecticut, and Norfolk, Virginia, and the South Street Seaport Museum in New York City. But picturing this still-unborn Australian display, I found myself especially strongly "at sea." Aside from transporting its settlers, what had ships to do with the "great brown land"?

Plenty, it turns out. The collection now being assembled falls into broad categories beginning with the discovery of the southern continent. Aborigines of the far northwest coast made a raft for the museum—thick, light mangrove poles that fan outward at the bow. That design has not changed much over the thousands of years since these first human settlers arrived. Neither has that of the beautiful little bark canoe, stitched together by the Yanyuwa people of the Gulf of Carpentaria.

Items relating to the arrival of whites include paintings and models of the great clippers that brought thousands during the Australian gold rush of the mid-1800s. The famous old P&O (Pacific and Orient) liners have been coming to Australia since 1852, and the company has donated videos, photographs, models and other material.

The navy has its own niche in which to tell its tale of defense and exploration. I was shown a massive wooden figurehead of Lord Nelson, carefully restored, that had adorned the prow of HMS *Nelson*, back in 1814. This was Britain's largest wooden battleship and was turned over to the Colony of Victoria, in Australia, in the 1860s. Nelson's right sleeve is empty, as it was from 1797 onward, but he peers ahead with both eyes—no patch over the one he lost four years earlier.

The most undeniably Australian of all the museum themes is the category of leisure. This is frankly dedicated to sun, surf, sport—in short, fun. Here's where the world's sun-bleached surfers, searching for the perfect wave, will find



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their sport on display. Here the Aussies show off their racing 18-footers, shallow-draft boats carrying small mountains of sail, counterbalanced by crews clinging to trapezes. When the breeze kicks up in Sydney Harbour, the 18-footers literally fly from wave to wave in the world's only truly exciting regattas.

I saw two of these vessels being readied for the museum. One is high-tech: a hull of carbon fiber sandwiching honeycombed paper. The other dates from 1918—thin, light cedar formed into loving lines. "We'll let the conservation remain obvious," explained Fewster, "so people can appreciate the original construction."

Beside the ultramodern sailing speedster, cradled under wraps in a huge basement workroom, I paid homage to the world's fastest boat, the *Spirit of Australia*.

"Ken Warby designed this hydroplane in his Sydney kitchen," Fewster told me. The drawings then went to Tom Fink, one of the engineers who worked with Donald Campbell, the famous speed-record holder. They built the 27-foot hull, stuck a Westinghouse jet engine on it, and in 1978 got it past the 300-mile-an-hour mark. No one's beaten it yet.

As we moved on, I looked back at those two speed marvels, stored side by side. And I noticed between them a pretty little dugout canoe. A nice accident of juxtaposition.

The new museum has its own waterfront with a small fleet moored at its slips. The Royal Australian Navy has a couple of vessels on display there now. They'll be joined by fine old gaff-rigged yachts donated by New Zealand and Norway, by a pearling lugger from the northwest, and by an old-time sloop that once catered to Melbourne's taste for fish-and-chips. Here, too, lies a battered Vietnamese fishing boat that made it safely to Australia with a cargo of refugees at the end of the Vietnam War. The strangest vessel is a rare Indonesian *lete-lete*. It was used to gather trepang, off Western Australia. These fat sea worms, also called sea cucumbers, look revolting, but somehow Asiatic gourmets go for them.

America's ties with Australia are among the strongest international bonds in the world, so it's no surprise to find that we slipped the Aussies a present of five million bucks when they reached the age of 200, three years ago. This birthday present, inspired by the then American Ambassador to Canberra, Bill Lane jr., was to set up a permanent gallery dedicated to the maritime links between the two nations.

I was shown a large ground-floor area being prepared to hold this special exhibit. A bricked-in stand, for example, will support a huge model of the USS *Vermont*, one of the ships in Teddy Roosevelt's Great White Fleet, which visited Australia in 1908. There will also be a special display of items from Lt. Charles Wilkes' 1838-42 United States Exploring Expedition. This round-the-world scientific voyage paused in Australia for a shore leave that was so successful that 40 of our swabbies deserted.

Material from the Wilkes expedition was later turned over to the new Smithsonian, and a few years ago we displayed it (SMITHSONIAN, November 1985). Obviously the Australian museum folks have conferred at length

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with our people over this and other exhibits, and certain items in Sydney are on loan from Washington.

I consider it noteworthy that I dug up all this material while far out of touch with my dear old friend Joe Bonsignore, the publisher of this magazine and a 21-year SMITHSONIAN veteran. Like all writers and editors, I was taught that it's an unforgivable sin to accept an idea from the publisher. But over the years, Joe was as insidious as Old Scratch himself, bursting with infectious enthusiasm over some arcane character or exhibit. And in looking through my files I find that I used his ideas at least half a dozen times in this column. Mea culpa!

As I write this, Joe is—unbelievably—about to retire. He turns over his duties with us and our companion publication, *Air & Space/Smithsonian*, to Ron Walker, who rides here literally out of the sunset—*Sunset* magazine of California, that is.

Joe was one of our early staff—the "Mayflower Company," he calls us—who landed on the rocky soil of this venture in 1969 and rendered it fertile enough to sprout SMITHSONIAN, Volume 1, Number 1, in April 1970. No editor worth his salt has the faintest idea what a publisher really does (except that it includes everything about a magazine that the editors don't do), and I'd sometimes have lunch with Joe to find out. All I ever learned were the names of new restaurants. But Joe clearly did exactly what he was supposed to do, since this magazine has grown dramatically in times when quite a few have gone under.

I'm sure Ron will also do whatever needs to be done, whatever it is. I look forward to lunch with him, though he'll likely cajole me with California mellow and leave me more befogged than ever. What I do know is that in their importance to a magazine, these guys rank right up there with the staples, without which everything would fall apart.

Joe will still be around as a consultant, and I'm sure he'll continue to catch me in dark corridors, pin me to the wall and whisper, "Hey! I just ran into a wonderful subject for you . . ." He's probably already told Ron that I have problems with the word "No." I'll have to watch myself very carefully.

For in the end I'll admit that, in addition to having the right stuff as a publisher, Joe does often know a good story when he sees one.

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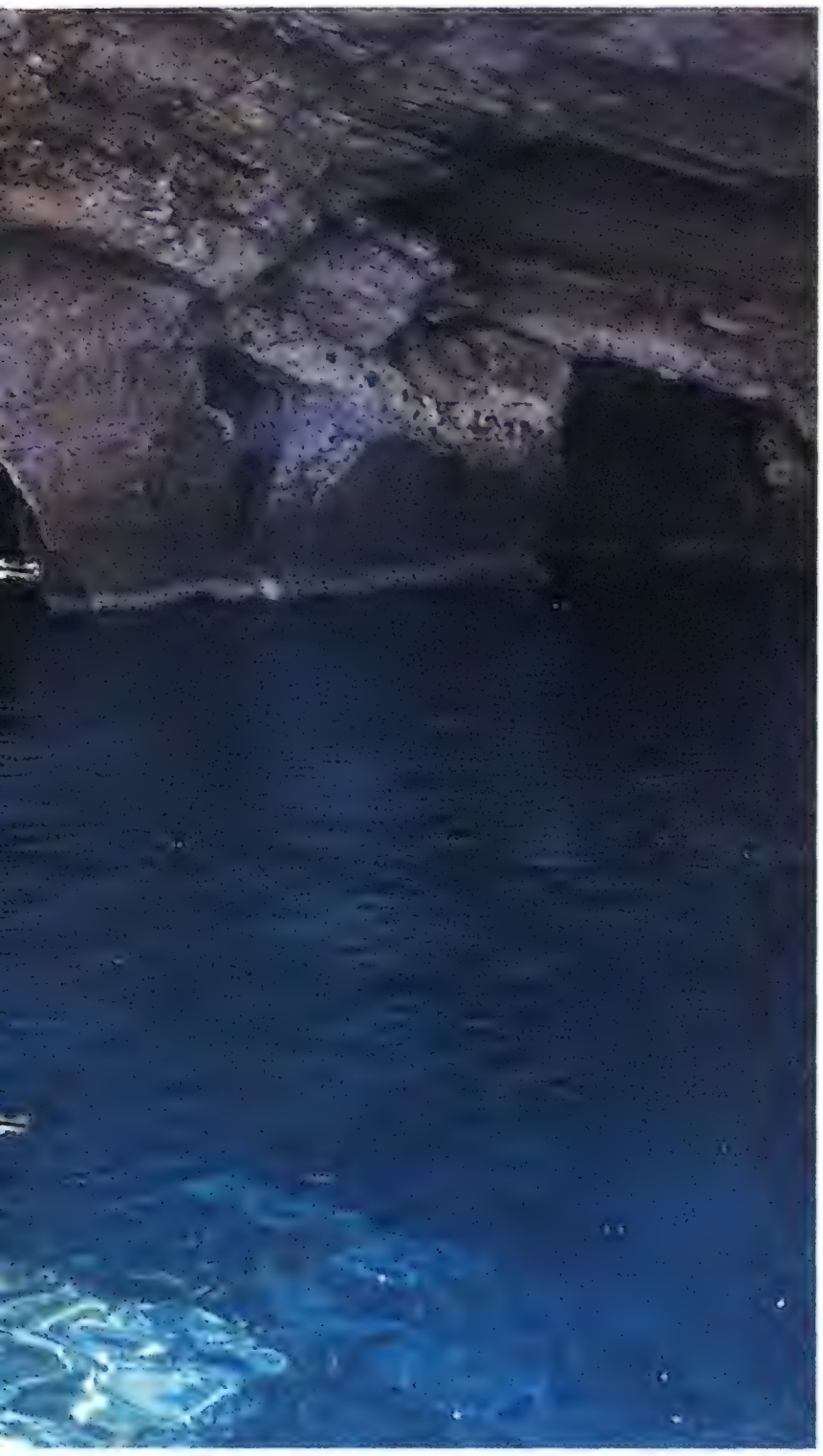

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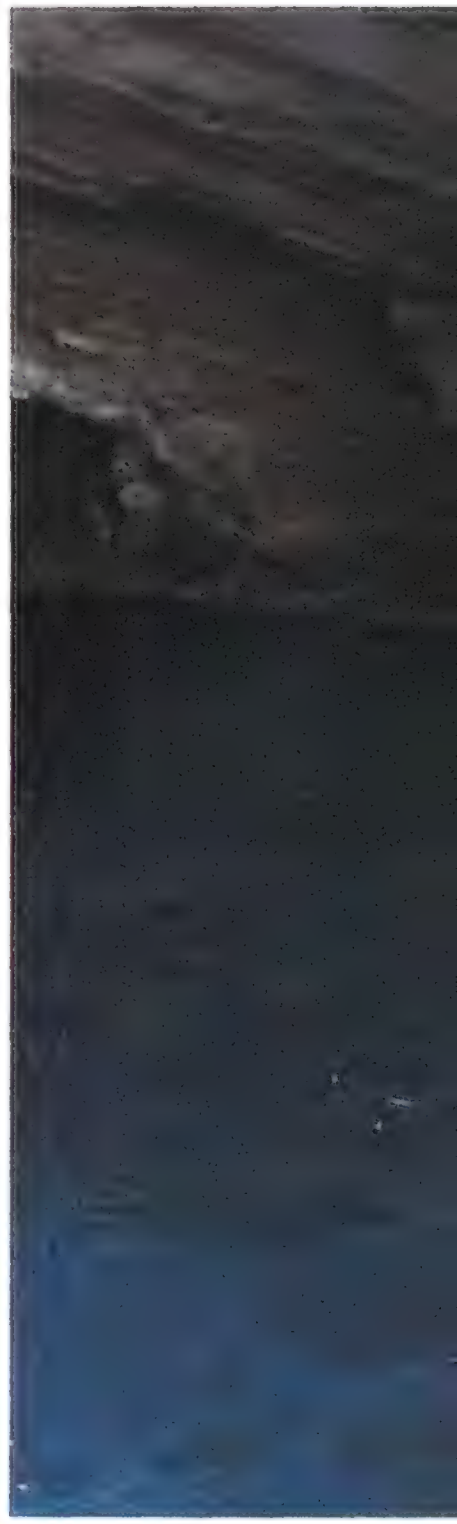

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Phenomena, comment and notes

The astronomer who discovered Pluto in 1930 still keeps an eye on the sky from his backyard in New Mexico

Of all the billions of people who have lived since the origins of the human race, three—just three—have first seen new planets. Mercury, Venus, Mars, Jupiter and Saturn are visible to the naked eye and were known to the ancients, but the outer planets had to wait for the invention of the telescope. In 1781, the English-German amateur William Herschel discovered Uranus through a telescope in Bath, England. In 1846, German astronomers, acting on predictions from English and French scientists, found Neptune. But it wasn't until 1930 that the outermost known planet, Pluto, was found. It's a piece of extraordinary good fortune that the man who made this last discovery, the third member of the exclusive club, is still around to tell us what the experience is like.

Clyde Tombaugh is now an emeritus professor of astronomy at New Mexico State University in Las Cruces. He wears a yellow baseball cap while driving his pickup truck around campus and is, according to the students I talked to, a "cool dude" (a phrase, I am given to understand, that indicates high approbation).

It's a long road from the cornfields of Streator, Illinois, to a position as a revered member of the scientific community, and the way Tombaugh traveled that road is unusual. He was introduced to the stars at the age of 12 by his uncle Leon, who lent him a small telescope. When the family moved to Kansas, he built a 9-inch instrument of his own and began observing the planets. In 1928, at the age of 22, he sent his drawings of the planetary surfaces to Lowell Observatory in Flagstaff, Arizona. He just wanted the professionals to look at his sketches, but they were so taken by the correspondence between his drawings and what they were seeing through their telescopes that they offered him a job a few weeks later. "I didn't know it," he says, "but I'd been preparing for that job all my life." This is followed by a pause and a twinkle in the eye. "Good thing, too—otherwise I'd have been back pitching hay."

Once at Lowell, Tombaugh quickly discovered three things: 1) the observatory was committed to searching for a supposed ninth member of the solar system, at least in part because founder Percival Lowell (*Phenomena*, January 1988) had predicted its existence; 2) the original searches had been of the quick-and-dirty variety and their negative results had most of the astronomers pretty discouraged; and 3) he was going to have to go through the tedium of a thorough search.

Planet hunting has never been an especially glamorous occupation. Even if you know exactly where to look, the only way you can tell whether a particular point of light is a planet as small and distant as Pluto is to watch it for a few days and see if it moves. But the sky is full of asteroids that show up as faint,

Clyde Tombaugh still has the 9-inch telescope he built as a boy in Kansas.

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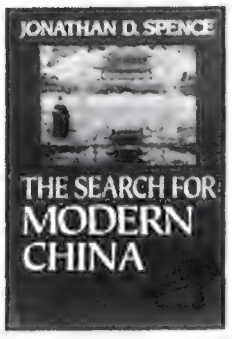

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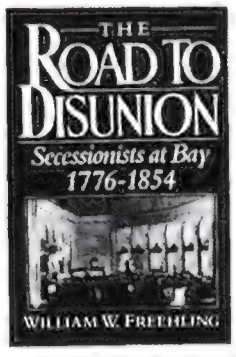

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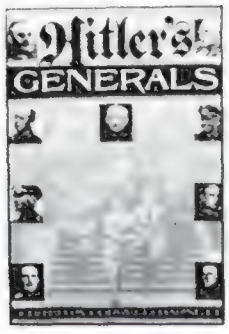

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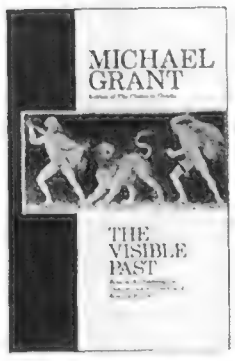

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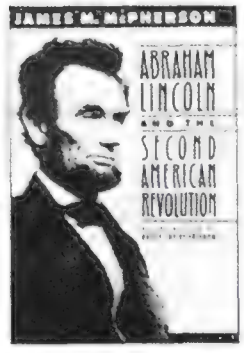

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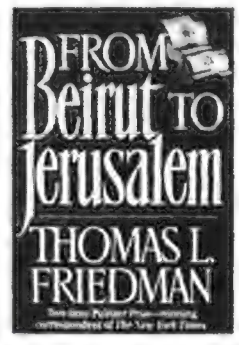

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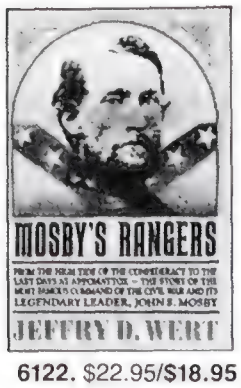

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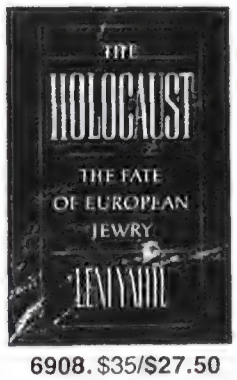

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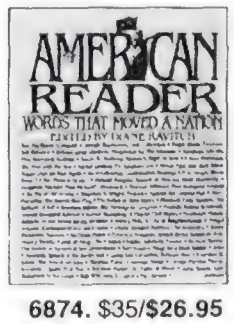

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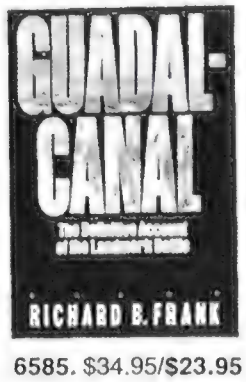

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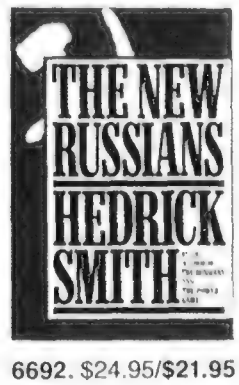

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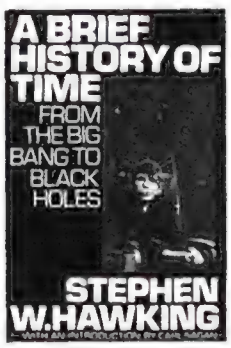

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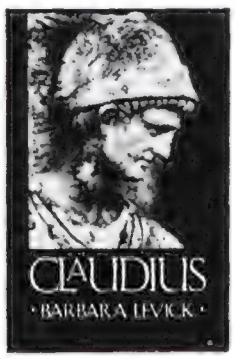

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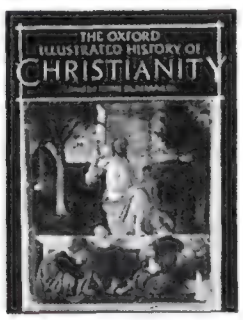

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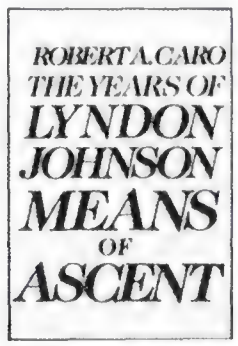

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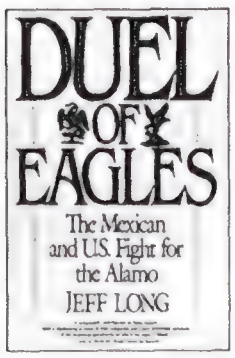

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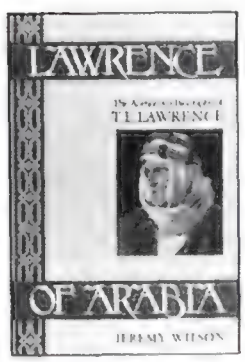

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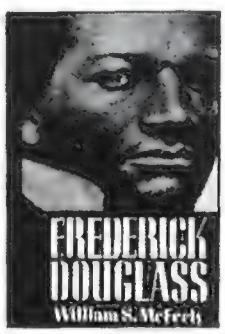

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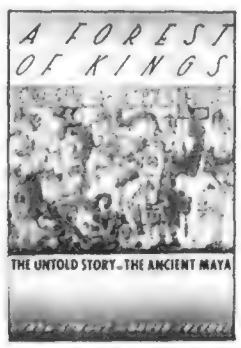

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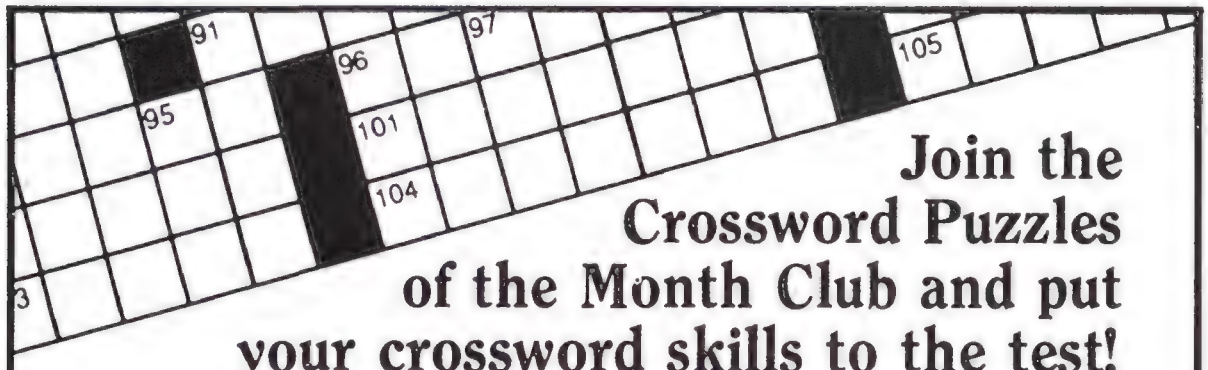

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moving dots in a telescope, so the search comes down to trying to figure out which, if any, is a planet.

Photographic plates of a particular section of sky are taken a few nights apart and then placed in a machine that shows first one, then the other in an eyepiece. Ordinary stars will stay still, but anything that has moved will appear to jump back and forth as the images are alternated.

Of course, the search gets difficult if you aren't sure where the planet is. Lowell had made a prediction about where Planet X ought to be, but Tombaugh was skeptical. "In fact," he says, "I wasn't even sure there *was* a Planet X. Lowell had shifted his predicted location from [the constellation] Libra to [the constellation] Gemini, and if the prediction could change that much, how solid could it be?" So instead of using the predictions, Tombaugh set out to search the whole sky. "I was shocked that the first searches were so sloppy and unsystematic. I told [the observatory director] we'd have to do them all again. He agreed, but why the hell didn't he know that?"

The search strategy Tombaugh finally hit on is easy to visualize if you think of Earth moving in its orbit around the Sun. As Earth passes a slower-moving outer planet, for a brief period that planet will appear to move backward among the stars. The farther out the planet, the less its apparent backward motion, and this is what gave Tombaugh his litmus test. The way he took his photographs, asteroids would appear to move backward about seven millimeters from one day to the next, while the more distant Planet X would shift only a half-millimeter or so. (One millimeter is about the thickness of a quarter.)

For half a year, he settled into a grueling routine: photograph the sky during the dark of the moon, "blink" the plates the rest of the time. Looking at an average of 35,000 stars per day, he slogged on while Earth swept new fields into view as it moved around the Sun. Then, on the afternoon of February 18, 1930, he hit pay dirt. Dots of light on plates taken six days apart in late January shifted about 3.5 millimeters—just about what was expected for Planet X. Tombaugh says he thought: "Uh-oh, I'd better look at my watch—this could be an historic moment."

It was. As confirmed by plates taken before and after, this was the first sight-

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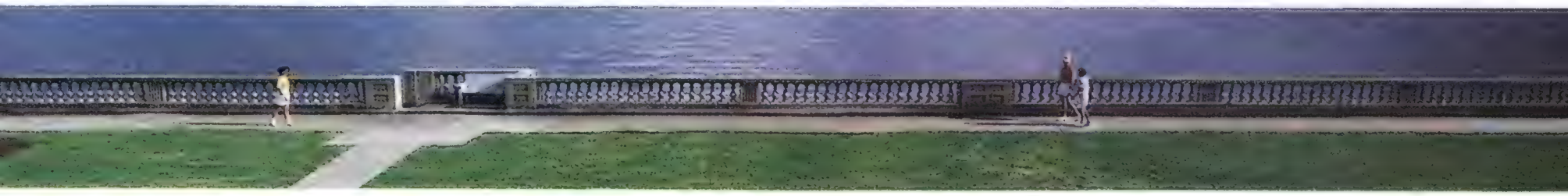

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ing of the planet we now call Pluto. How did it feel? Tombaugh laughs. "It made my day." Then, more seriously, he adds, "For 45 minutes I was the only person in the world who knew the position of Planet X."

As it happened, the planet was near where Lowell's second prediction had placed it, but that was just a coincidence. We now know that its mass is far too small to have caused the irregularities in the orbits of Uranus and Neptune that Lowell used to predict the location of his planet. Pluto was not Planet X. (Indeed, today some astronomers think those irregularities were just normal instrumental errors.) But in the end, predictions didn't matter—Tombaugh's systematic search would have found anything out there.

What strikes me as most amazing is that the staff at Lowell sat on this discovery for three weeks, checking data and working out the new planet's orbit before making the announcement. Tombaugh didn't even tell his own mother or father about it! Today, he and his colleagues would be on the phone to reporters within the hour (for an article on the tactics of announcing a scientific discovery, including this one, see page 72).

So what do you do if you're 24 years old and have already made sure your name will be in the history books? After a few more years completing his sky survey, Tombaugh went off to the University of Kansas to get a college education. Did having someone in their classrooms who had made a major discovery bother the professors? "I was older than most of the students," Tombaugh recalls, "and I got along well with the professors." But "they wouldn't let me take introductory astronomy—I got cheated out of five hours of credit!"

Degree in hand, he returned to Lowell to resume surveying the sky. He reckons that in his lifetime he spent 7,000 hours blinking plates, during which time he catalogued 3,969 asteroids, 1,807 variable stars, 1 comet and no fewer than 29,548 galaxies. He even saw that galaxies are not scattered randomly through space, but are clustered together in some places, leaving voids in others. This fact, reinforced now by data from the best modern surveys, remains one of the central unsolved problems of modern cosmology.

World War II took him away from the science he loved. During the war he taught Navy navigators in Flagstaff, and afterward, in what has to be one of the worst displays of ingratitude in the history of science, he was told he'd have to leave the observatory because of a budget crunch. After nine years at White Sands Missile Range developing telescopes to watch rockets in flight, he went to New Mexico State University to teach.

But as time has gone on, and as one attempt after another to establish the existence of planetary systems around other stars has foundered, the scientific community has come to treasure its sole living successful planet hunter. Over the past few years Tombaugh has traveled widely, lecturing at universities and symposia, and raising money for a scholarship fund at New Mexico State. Closer to home, he has had the unusual honor of having a local elementary school named after him. On his last birthday he went to the school to be presented with 671 birthday cards and a bouquet of hugs from the assembled students.

Even in a fairly active retirement, his first love remains the sky. The backyard of his house in Las Cruces bristles with telescopes, including one with a 16-inch mirror. On a clear evening, we go out to observe. We use a 10-inch instrument attached to the chassis of an old lawn mower so that it can be wheeled around. As we look at the colored bands and moons of Jupiter and the dramatic craters on our own moon, the mood shifts. For just a moment, the moonlight changes texture, and Clyde Tombaugh, wearing a fur hat against the chill, becomes a magical figure, the keeper of the gates to the treasure.

The mood passes. As we stroll back toward the house, he pauses at another of his telescopes. Pointing out some details ("This shaft came from a 1910 Buick, this stand's from an old cream separator"), Tombaugh displays the very telescope he built as a farmboy in Kansas so long ago—the telescope he used to make the sketches that started him on his path to discovery (p. 32).

"I got a letter from the Smithsonian a while back. They said they wanted it for the museum." He pats the instrument lovingly. "I told them they couldn't have it. I'm not through using it yet!"

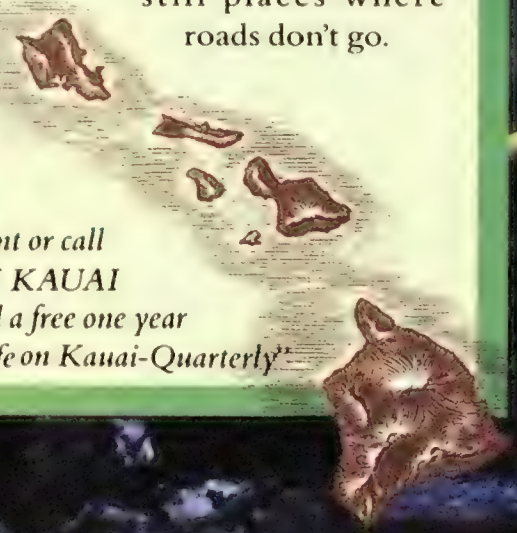
James Trefil
Professor of Physics, George Mason University, and coauthor of *Science Matters: Achieving Scientific Literacy*

LIFE ON KAUAI

Along the Na Pali coast, there is an 11-mile hike called the Kalalau Trail. When considering this challenge, there are two things to remember: the path is never flat and the scenery is never dull.

The road to Kauai's north end stops completely at the entrance to the Kalalau trail. In ancient times only royalty was allowed access to this part of the island.

Today anyone can enjoy the breathtaking views on the trail, pick guava from the trees or rest on secluded north shore beaches. And while climbing over rocks, up towering hills and through streams isn't easy, it's worth it. After all, people come to life on Kauai because there are still places where roads don't go.



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By David Roberts

In France, an ordeal by fire and a monster weapon called 'Bad Neighbor'

On a sunny June morning, I sat atop a high wall on the ruined castle of Montségur in southern France, my feet dangling over the edge. Before me lay the narrow pentagon of the fortress' inner courtyard. Despite the summer warmth, it was easy to conjure up the gloom of medieval Decembers inside that claustrophobic keep. Floating in the sky at the apex of a pinnacle of gray limestone, Montségur seems to breathe adamantine inaccessibility.

On my left, 500 feet below, a group of schoolchildren had spread out their picnic on the edge of a field blazing with dandelions. The carefree music of their voices wafted up to me. It seemed unlikely that the youngsters knew much about that meadow, whose ancient name, Prat dels Crematz, means "Field of the Burned." There, one March day in A.D. 1244, knights of the French army built a huge pyre of brush and wood; then they led more than 200 chained prisoners from the castle down to the pyre and burned them alive. The victims were Cathars, nonviolent Christian heretics whose apostasy had convulsed Europe for half a century. They went to their deaths not so much in terror as with an eerie serenity.

To the average American, the Albigensian Crusade, if the term calls up anything at all, is but a musty vapor from some forgotten history lesson. To the inhabitants of Languedoc, the green and craggy winegrowing region that sprawls across southwestern France, the crusade forms a keystone of cultural identity. But for that bitter and protracted war—the only crusade ever declared by a pope against Europeans—Languedoc might today be an independent country. Its people might speak Occitan, not French, and troubadour poets might still sing of their love for unattainable ladies.

Like the Manichaes whom Saint Augustine combated at the end of the fourth century, the Cathars were dualists holding that all things on Earth were evil, the creation of the Devil who, in the strict version of the faith, was as eternal and powerful as God. Cathars rejected the Old Testament, whose wrathful Jehovah

Mountaintop castles are all that remain of
a gentle people whose theology brought death
to them and the Inquisition to all of Europe

Once the stronghold of a heretical sect, the castle at Montségur still towers over southwestern France.

The monastery at Fontfroide was an outpost for Pope Innocent III in what became enemy territory. It was the killing of a papal legate in 1208 that triggered the bloody, 113-year Albigensian Crusade.

was actually Satan in disguise. They rejected the Catholic sacraments, including baptism at birth, marriage, confession and the Eucharist. Since all matter was evil, Cathars refused to believe that Christ had ever assumed a human body; his apparent incarnation was an illusion used by God to instruct the faithful. The only prayer Cathars said was the Lord's Prayer, which they recited as often as 40 times a day.

All men and women were composed of a corrupt body; a spirit, which alone could find heaven; and a soul that, "suspended between two abysses," sought to unite with the spirit while being sorely tempted by the flesh. The Cathars were divided into an elite, called *parfaits*, or "perfects," and a larger population of mere *croyants*, or "believers." To become a *parfait* required a novitiate in austerity lasting as long as three or four years, capped with a formal ceremony called the *consolamentum*, a kind of baptism by book and word rather than by water. *Parfaits* refused to eat meat or any other food, such as cheese or eggs, that was a byproduct of animal procreation. They could never touch women. (There were many *parfaites*, females who made equivalent vows, and who had equal status with the *parfaits*.) *Parfaits* resolved never to lie, and to face death without fear. "There is no more beautiful death than that of fire," they assured one another.

Until persecution made disguise essential, the *parfait* wore a long black robe under which he hung a parchment copy of the Gospel according to John from a leather belt. *Parfaits* were full-bearded and wore their hair long (women had to hide their hair). They traveled about the countryside in pairs, never alone, for safety but also to keep watch upon one another. Ordinary *croyants* could lead lives of normal sensuality, but near the end had to take the *consolamentum*. There sometimes followed a process called *endura*, in

A mountain climber and writer, David Roberts lives in Cambridge, Massachusetts, when not traveling. His most recent book is Iceland: Land of the Sagas.

which the fresh convert deliberately starved to death.

The Cathars were drawn to southwestern France because of the region's tolerance for unorthodox ideas. By the 12th century, Languedoc had become, in the words of one scholar, "in many respects the most civilized part of western Europe." The city of Toulouse was more opulent and more intellectually advanced than Paris. Troubadour poets were engaged in the heady task of inventing the lyric poetry of the Renaissance. The Occitan language was regarded by literate Europeans as superior to French or Italian: Dante originally planned to write the *Divine Comedy* in that tongue. The rigid feudalism of the north did not hold sway in Languedoc, where peasants often owned their own land. In the 12th century, France was far from the unified country we know today: its king ruled a territory only one-tenth the size of modern France. The count of Toulouse, as the most powerful lord in Languedoc, was virtually a king in his own right.

Alarmed by the rise of the Cathars, a series of 12th-century popes set out to stop them. Their remedy was to send the best Catholic orators to Languedoc to preach the truth. The first emissary was no less a figure than Saint Bernard, who packed the cathedral at Albi but failed to convert more than a handful. The preaching crusade gave way to a series of debates between Cathar and Catholic spokesmen. These wildly popular frays lasted as long as eight days. Led by such eloquent *parfaits* as Guilabert of Castres, the Cathars gave as good as they got.

Fighting the heretics with their own weapons

One day in 1206, a pair of discouraged Spanish clerics paused for a rest in Montpellier, where they ran into some equally disheartened papal legates, veterans of these debates. It suddenly occurred to the Spaniards that the Cathars had won much of their following by the daunting example of their poverty and simplicity. Why not fight the heretics with their own weapons? The Spaniards set out barefoot, penniless, living on bread and water, to preach their way across Languedoc. The older priest quickly weakened and went home to die, but the younger made people sit up and take notice. Dominic de Guzman, soon to found an order of preaching friars now called the Dominicans, was regarded in Languedoc as an impressive madman. He slept by the roadside even in winter, and when crowds jeered him, he strode along singing.

Saint Dominic was a fierce debater, still full of energy on his eighth day of nonstop haggling. At least once he went head to head with his Cathar match, Guilabert of Castres. Yet even Dominic failed to dent the heresy. Unable to document mass conversions, his chroniclers cited instead the testimony of miracles. In a backcountry castle, they reported, Dominic and his opponent decided to let God settle the debate. Each committed his gospel to an envoy of the other side, who threw it into the fire. The Cathar book burned to ashes, but Dominic's leapt out of the flames (below) and struck a rafter. In the church at Fanjeaux, the town where Dominic settled, you can still see the rafter, scarred by the sparks that flew up with the book.

In 1198, Innocent III, who would come to be regarded as the greatest of medieval pontiffs, was elected pope. Relentless in his determination to wipe out the Albigensian heresy (named after the people, or *gens*, of Albi, a town rife with dualists), Innocent began snarling at the heels of the Languedocian nobility who sheltered Cathars. His main target was Raymond VI, count of Toulouse. A sensual, cultured man, Raymond would manage to steer his ship of state through a 20-year narrows of treacherous shoals.

Innocent's main outpost in Languedoc was the monastery of Fontfroide. From its cloister, the papal legate

Saint Dominic (with the halo) wins theological debate when his gospel rises from flames toward the ceiling.

charged with exterminating heresy in Languedoc set forth for a meeting with Raymond VI. In January 1208 these two stubborn men locked horns at St.-Gilles. In a foul temper, Raymond refused to give in to the legate's demands, and uttered vague threats when the man announced his departure. The next morning, as the legate's party tried to ford the Rhône, a mysterious horseman charged the camp and killed the legate with a lance through the back.

Thus, in a single stroke, began what would become, in the words of Jonathan Sumption, whose *The Albigensian Crusade* is the best book in English about the subject, "one of the most savage of all mediaeval wars." Innocent declared the legate a martyr and launched the crusade. Monks roamed the northern roads, offering the papal indulgence of remission of all sins for 40 days' service in the holy war. An army of northerners more than 15,000 strong, swelled by German mercenaries, gathered in Lyon. As religious leader of the crusade, Innocent appointed the abbot Arnald-Amaury, an ambitious fanatic who had no qualms about killing heretics.

In July 1209 the army marched on the ill-prepared town of Béziers, in northeastern Languedoc. Led by a ragtag mob of camp followers and servants, the crusaders burst through the town gates and unleashed a riot of murder and looting. In the middle of the massacre, it was reported, Arnald-Amaury was asked how the soldiers could distinguish heretics from Catholics. "Kill them all," he replied; "God will recognize his own."

Terrified by the news from Béziers, other towns surrendered without a fight. Raymond VI dared not openly support the defenders, let alone ride at their head. Already excommunicated by the pope, he was forced to undergo a humiliating public flogging in hopes of retaining his title as count of Toulouse. The defense of Languedoc fell instead to more-militant leaders, like Raymond-Roger Trencavel, the nephew of Raymond VI.

At Carcassonne, a safe-conduct betrayed

Only 24 at the time, Trencavel set up a garrison inside the walls of Carcassonne. The crusaders laid siege to the city. After 18 days, the defenders had repulsed the bravest attacks of the huge army, but the crowds that had taken refuge inside were beginning to perish from lack of food and water. Trencavel accepted a safe-conduct to negotiate with the crusaders, who immediately betrayed it, seizing the young viscount and clapping him in irons.

This time, however, the lives of the citizens were spared. Trencavel was thrown in prison, where he died three months later—perhaps from dysentery, though everyone in Languedoc today believes that the hero of the resistance was poisoned in his cell.

Far more than pitched battles, it was lengthy sieges that spelled the course of the Albigensian War. A radical new military technology was applied with a vengeance. The attackers built huge rock-throwing machines, called trebuchets and mangonels, on the spot. Defenders had their own trebuchets, as well as giant crossbows cranked up with winches, called ballistae, that were remarkably accurate. Incredibly daring sappers dug trenches up to the walls, where, in an age before explosives, under fire from the towers, they undermined the stones to make the walls collapse. The *tour roulante*, which could stand as tall as 150 feet and carry a hundred soldiers, was the ultimate war machine: pushed across wooden rollers up to a stone wall, it disgorged a horde of frenzied attackers who swarmed inside a fortified city.

Though the eradication of heresy was the pretext for the crusade, it quickly became a free-for-all of secular opportunism. The southerners recruited their own mercenaries, many of them from Spain. Petty lords of the north, languishing in bankrupt fiefdoms, saw the war as a chance to grow rich and powerful in Languedoc. At the siege of Carcassonne the most talented of these carpetbaggers emerged. Simon de

Simon de Montfort, the crusade's military genius, often mutilated prisoners, but so did the other side.

In the first battle of the Albigensian Crusade, an army of 15,000 easily took the ill-prepared town of Béziers in a riot of killing and looting. This 19th-century view gives no hint of the ragtag mob that actually led the initial charge.

Montfort, tall, athletic and fearless, was elected by his peers as head of the army, whose ranks were constantly depleted by crusaders returning home after serving their 40 days. In Sumption's words, Simon was "a model Christian of austere personal morals, and a military leader of genius."

The bloodiest period of the Albigensian War came in its first four years, from 1208 to 1212, as Simon swept brilliantly across the length and breadth of Languedoc. Victories were celebrated with atrocities. At Bram, Simon took a hundred hostages, cut off their noses and upper lips, and blinded all but one, who led the pitiful procession to the castle of Cabaret. Such spectacles were designed to terrify the populace and facilitate the conquest, but they revealed as well the self-righteous cruelty of fanaticism, second nature to men like Simon de Montfort and Arnald-Amaury. At Lavaur, Simon ordered 90 captured knights hung; when the gibbet broke under the weight of the first, he impatiently put his captives to death by sword. Giraude, sister of the commander at Lavaur and a noted Cathar, was thrown screaming down a well and stoned to death. Then some 300 to 400 heretics found hiding inside the walls were taken outside town where, as the crusade's historian, who was a participant, put it, "we burned them alive with joy in our hearts."

The memory of these depredations is bitter and vivid in Languedoc today. But there were tortures and mutilations on the part of the southerners as well. They too cut off noses and lips, and sent victims back to their leaders as ghastly exemplars. At Toulouse, recorded the crusade's historian in tones of pious indignation, defenders blinded some of their prisoners, cut out the tongues of others and hacked still others to pieces, which they fired at the enemy with a trebuchet.

One of the bravest resistances took place at Minerve, an ancient town extraordinarily situated at the junction of two streams, guarded on three sides by vertical

At Minerve, a town protected on three sides by cliffs, Cathar defenders withstood siege for six weeks.

cliffs and linked to the surrounding plateau only by a tiny neck of land (right). The attackers set up trebuchets on three sides and battered the walls day and night. Their strategy was to assault the covered passageway that led to a well at the base of the cliff on the southeast, Minerve's only source of water. To do so, the crusaders built a giant trebuchet that they sardonically named Malevoisine (Bad Neighbor). After six weeks of siege, a party of defenders made an intrepid sortie at night and managed to set Malevoisine on fire. But an engineer happened to leave his tent at that moment to relieve himself. He was quickly lanced, but the fire was put out and Malevoisine continued to hammer away at the covered passage.

At last the defenders capitulated. Arnald-Amaury agreed to spare the lives of Minerve's heroic garrison, including its 140 *parfaits*, if only they would abjure their heresy. But as the crusaders marched through the streets, the *parfaits* told them to save their breath: "Why preach at us? We care nothing for your faith, we deny the church of Rome." The *parfaites*, says the chronicler, were even more obdurate than the men. A pyre was prepared. The conquerors were spared the trouble of dragging their victims to their deaths: many Cathars threw themselves onto the flames.

By the end of 1212, Simon had conquered virtually all of Languedoc; yet the war would continue for another 17 years. In driving scores of local noblemen from their domains, the crusaders created a whole class of dispossessed outlaws hungry for revenge. The pride of Languedoc was its vineyards. In Roman times, the best wine in France came from Béziers. The loveliest ornament of the countryside today is its terraced vineyards, a blaze of light green in June, a rash of gold in the autumn harvest. Whenever he besieged a city, Simon de Montfort made it his practice to tear up all the vineyards. This has not been forgotten in Languedoc.

Roads dating from Roman times linked such major cities as Toulouse, Narbonne and Carcassonne. But the backcountry was a tortuous wilderness of dense forests, limestone gorges pocked with caves and mountains beetled with overhanging cliffs. It was all too easy for a displaced lord to bide his time and gather warriors in some remote fastness of the high Corbières or the Ariège. After the burnings of Lavaur and Minerve, the Cathars too fled to the forests and mountains. Their *parfaits* had long since stopped wearing black robes; now they shaved their beards and wore identifying cords secretly beneath their cloaks.

Gradually the Cathars and their adherents began to assemble in clifftop castles deep in the wilderness. The ruins of more than 50 of these sanctuaries stand today. *Citadelles du vertige*, they are called, "vertiginous fortresses," for in their rude defensive isolation they remain the most spectacular medieval ruins in France.

To seek out these monuments to an extinguished faith is to make a Cathar pilgrimage. The astounding windowed curtain of Peyrepertuse, browing a long precipice: when the French army crested a pass to the north and first saw it, they were stupefied to a man. The cramped, mystic severity of Quéribus, last of all Cathar strongholds to succumb; Lordat, with its mottled, porous limestone lined with veins of black slate;

But catapults known as trebuchets (a replica stands at right) battered the resistance into submission.

spiky Aguilar, its mortar sprouting sprigs of rosemary and thyme; the four linked towers of Lastours, mirrored by towering cypresses; Termes, which withstood a grim four-month siege, only to be dismantled in the 17th century by a soulless governor; serene Roquefixade, never captured, from whose mount the Cathars signaled by fire to distant Montségur.

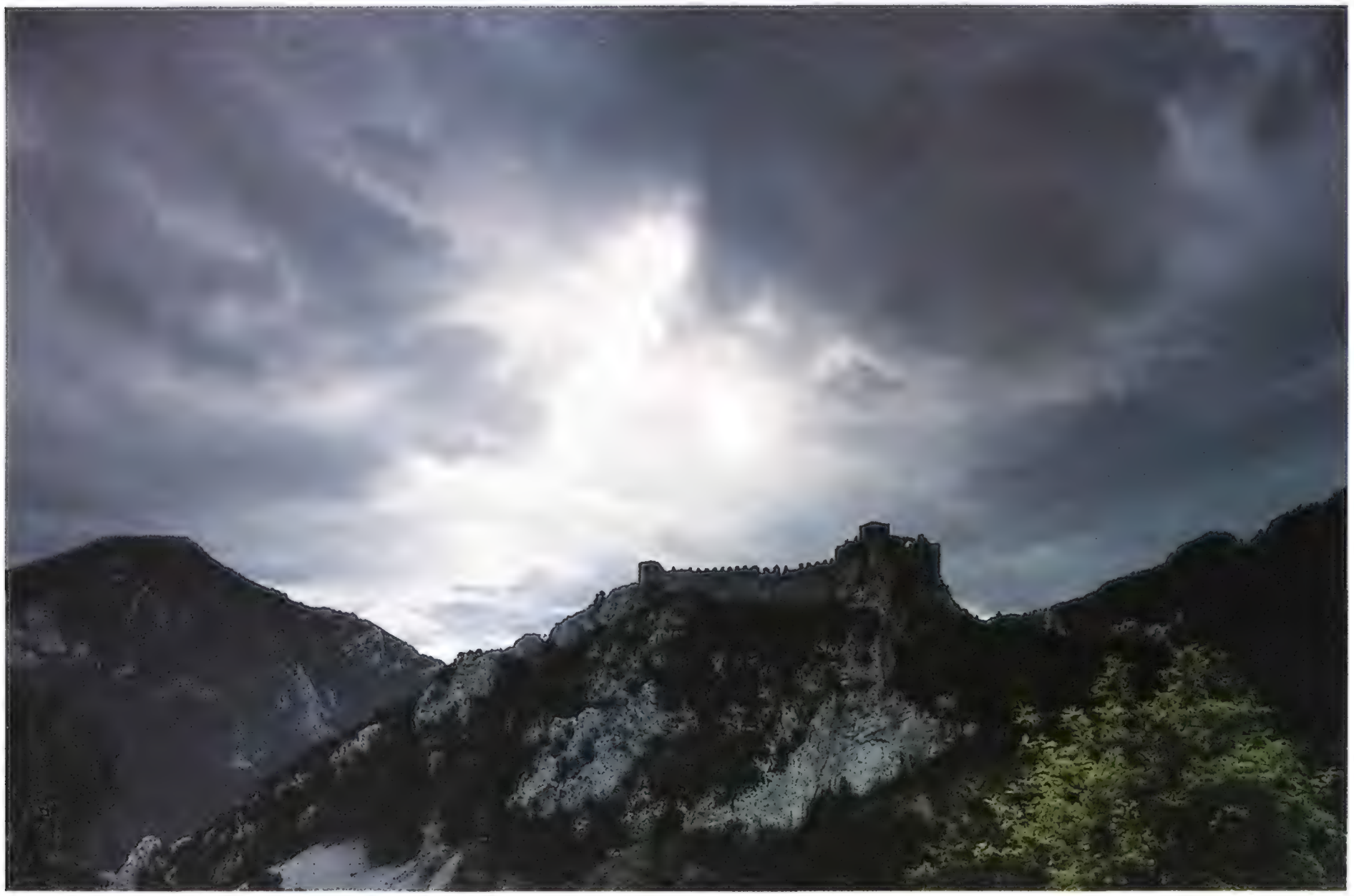
Last June, as I stood atop the walls of Puylaurens, to my mind the most graceful of all the *citadelles du vertige*, I pondered an oddity of the 13th century. For decades, a colony of hunted fugitives had led a precarious life inside the spartan precinct beneath my feet. Yet, as is true of most of the Cathar castles, almost no documents survive to attest to that ordeal. Puylaurens is barely mentioned by history.

The sun darted in and out of a morning mist that hung upon the surrounding peaks, and birds sang from the dark woods. In its precipitous, rugged grandeur, Puylaurens set my heart soaring. I found it all but unfathomable to imagine such beauty commanded by men and women to whom all created things were evil, for whom the very grass on which they lay at night was, in the words of a Cathar spokesman, "only corruption and confusion."

The war wound on, as Simon found it harder to keep his southern holdings than it had been to conquer them. One rebellion after another sprang up; the crusaders, who had perfected the art of siege, found themselves besieged. For nine months Raymond VI and Simon struggled over Toulouse, the most important town in Languedoc. Then one day in July 1218, a stone flung blind from a trebuchet hit Simon in the head, killing him. Languedocians still delight in the knowledge that the machine was loaded by women.

Simon's son took over the crusade, but he was not his father's equal. By 1224 the southerners had reclaimed nearly all of Languedoc and were close to winning the war. For years, Innocent III had beseeched the king of France to join the crusade; at last, in 1226, Louis VIII heeded the exhortation. Exhausted by two decades of warfare, which had turned much of their country into wasteland, the southerners gave up in 1229. With the Treaty of Meaux, Languedoc ceased forever to be an independent state. The conquerors tore down the walls of Toulouse and erected new churches. The grandiose cathedrals of Albi and Narbonne were built to proclaim to cowed citizens the eternal supremacy of the church of Rome.

Pope Innocent had died, but Pope Gregory IX knew there were still heretics hiding out all over the South of France. In 1233 he put the Dominicans in charge of a systematic effort to expunge them. Thus was born the



Defeated after many years, the Cathars retreated to "*citadelles du vertige*" such as this one at Puylaurens.

Inquisition, whose sinister persecutions were to earn the church as much enmity in Languedoc as the crusade had. The burnings began again—210 at Moissac early on, perhaps 5,000 all told in the subsequent half-century. The inquisitors even convicted dead heretics, exhumed their bones and publicly burned them.

For the remaining Cathars, life became an incessant flight from one sanctuary to another. They ate scraps of leftover food for which they were too proud to beg, furtively announcing their arrival at a sympathetic house by tossing a pebble against the shutter, and guarded their speech, for anyone, even a shepherd in some high Pyrénées pasture, could be an informer. Yet they were heroes in their homeland: a peasant in Montaillou, for instance, kept for 22 years a few crumbs of bread that had been blessed by a *parfait*.

By the late 1230s, some 500 Cathars and supporters had taken refuge in the seemingly impregnable castle of Montségur, atop its steep plug of limestone. They included the brilliant debater Guilabert of Castres. Neither the church nor the royal army knew what to do about this bastion of heresy; for years it was left alone. Then in 1242, some knights from Montségur rode out and murdered a small band of inquisitors. The crusaders burned all their writings; we have almost no records of these people and their fate.

Enraged, the church directed an army of several thousand troops to lay siege to Montségur.

It might have seemed an unequal struggle, but Montségur held out for nine months, through the bitter winter of 1243-44. The royal army had difficulty surrounding the peak's broad and convoluted base; the countryside was full of uncooperative villagers; and the garrison in the castle managed to reinforce itself with insulting ease.

The turning point came in January 1244. Under cover of night, several Basques, specialists at climbing, scaled the cliff on the southeast to attack the crucial east barbican of the castle. As chronicled by Guillaume de Puylaurens, their effort took them, they reported, "with the aid of God, up horrible precipices"; the next morning, "when they examined the terrifying route they had climbed during the night, they knew they would never have dared attempt it by day."

On my own visit to Montségur, I climbed the thousand-foot route that a French historian has identified as the Basque line. It begins in a frightening gully full of huge rocks that dislodge at a touch, and ends on a steep precipice, where there are good holds but immense exposure as well. Even in broad daylight, and

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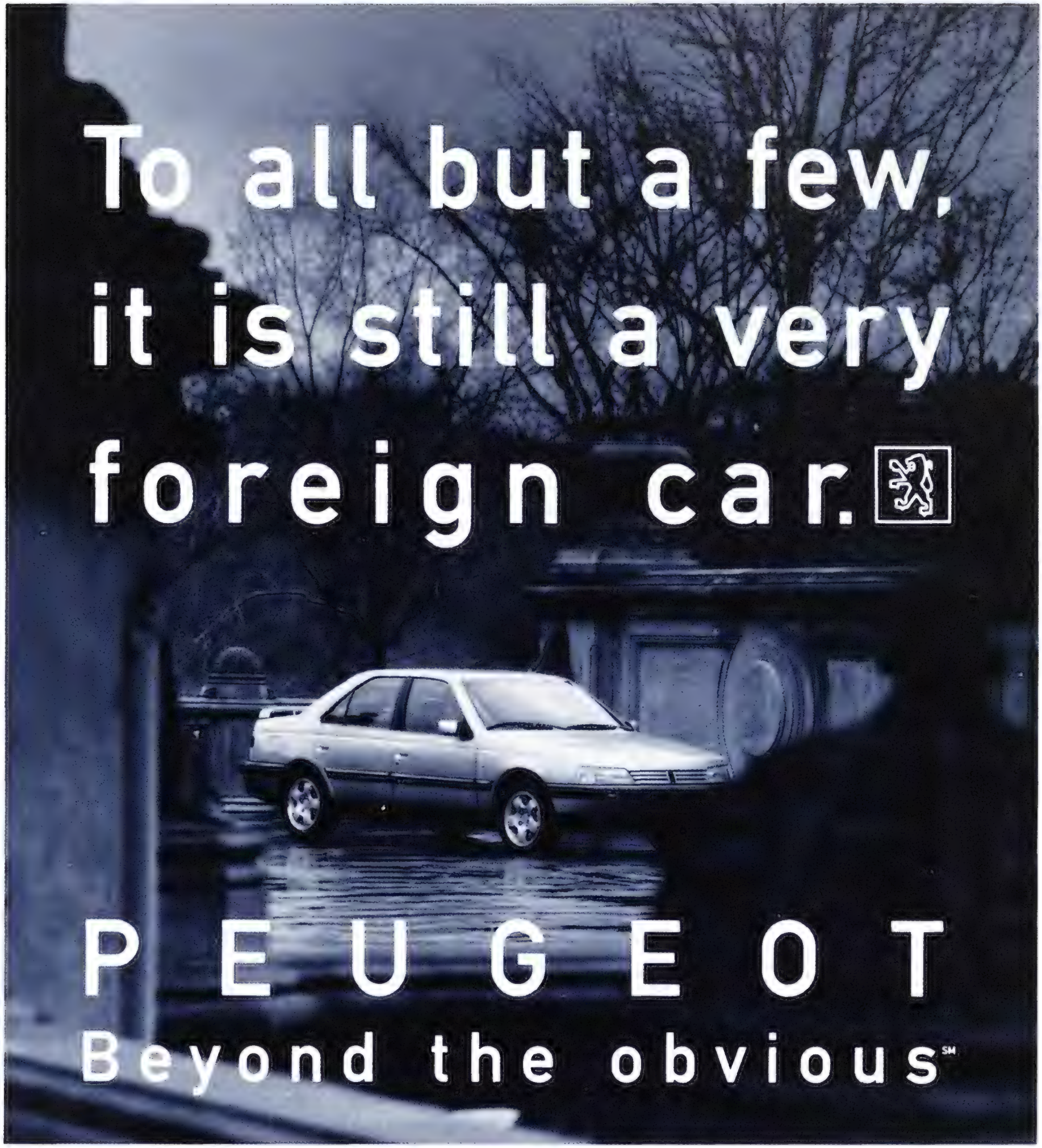

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Stone slab resting on three rocks dominates cave where Cathars may have hidden from inquisitors.

in June rather than January, I found the ascent exciting. I was glad to have rock-climbing shoes on my feet, and even gladder not to have to knife any sentries on reaching the summit.

Having won the east barbican, the royal army was able to build a trebuchet that blasted the castle walls from close range. In early March, the garrison surrendered. For reasons that remain obscure, they were granted a grace period of 15 days before leaving the castle. One would think the less committed might have seized the chance to flee with their lives, but instead during that fortnight a steady stream of *croyants* received the *consolamentum*. On March 16, the army led more than 200 Cathars down the mountain and burned them in the meadow.

Unbeknownst to the attackers, the night before the holocaust four Cathar monks had slipped out of the castle, lowered themselves on ropes down the west face of Montségur and made their getaway. Their mission was to take the Cathar treasure, which had already been cached in the forest, and carry it to the caves of the Sabarthès, where it could be securely hidden. No one knows for sure what the Cathar treasure consisted of; before the Inquisition, one insider swore that it was "gold, silver, and a vast quantity of money." It has never been found.

From the late 19th century on, the lost Cathar treasure has inspired legions of cultists who have prowled through the caves of the Sabarthès in search of esoteric revelations. The huge grotto of Lombrives, some say, became a secret Cathar cathedral. (This amazing cave, one of the largest underground chambers in Europe, did indeed harbor generations of outlaws from the Reformation, the French Revolution and the Napoleonic Wars, whose charcoal signatures scrawled on the walls can be seen today; but the place has never been firmly linked to the Cathars.) A German mystic deduced that the Cathar treasure was nothing less than the Holy Grail, and claimed to find the cave that had once housed it. Generations of Dutch, English and German Rosicrucians, anthroposophists, latter-day Druids, followers of Madame Blavatsky, and believers in extraterrestrial visitors have descended upon the Sabarthès, and continue to do so.

From the antique spa of Ussat-les-Bains, I was guided last June to Bethlehem Cave by a soft-spoken, black-bearded, intense young man named Christian Koenig. As we bushwhacked up a steep slope, he talked of telluric and cosmic currents in the valley; on a limestone wall where I saw only natural calcite drippings, he pointed out three lances entwined by a snake, the 13 intersections corresponding to the 13 lamentations of Sophia. I could take his Rosicrucian ravings with a grain of salt, but suddenly we stood inside the Bethlehem grotto.

Its main opening had been filled with a 25-foot-high wall and doorway, unmistakably Romanesque in style. On the right wall of the cave, incised to a depth of six inches, stood a near-perfect pentagon, large enough for a man to stand in and spread his limbs and head to fill the five points of a star. Was it a natural anomaly? If so, the carved steps leading up to it were certainly man-made. While Koenig talked confidently on about the stages of the Cathar initiation ceremony, I stared at the remarkable object in the middle of the floor. A huge stone slab, 8 feet by 5 feet by 3 feet thick, rested atop three smooth, round, stone pedestals. Was it a prehistoric dolmen? Similar tables are found all over France, dating back as far as the fifth millennium B.C. But I had never seen or read of a dolmen inside a cave.

The last Cathar is burned at the stake

Had this amphitheater indeed sheltered heretics after Montségur? We know that through the last half of the 13th century, Cathars continued to meet clandestinely in forests and caves to hold their ceremonies, and the Sabarthès was one of their strongholds. The Inquisition continued to burn them when they caught them. The last enclave of heresy in Languedoc was the tiny upland village of Montaillou. Today the place is somnolent, ingrown. There I talked to an old-timer, who lamented that only two farmers still plowed the fields.

I looked through the telephone book where, among only 16 names of residents, I found a "Baille" and several "Clergues"—the same names as those of leading villagers in 1308. But when I asked a local woman about the Cathars, she laughed and said in her country French: "*Ils sont tous dégénérés*"—"They have all disappeared." In 1308 the entire adult population of the town was arrested. Only one of the leading *parfaits* escaped. Guillaume Belibaste fled to Catalonia, where he survived for more than a decade. But he made the mistake of trusting an old Montaillou neighbor, who had turned informer to the Inquisition. This man lured Belibaste into a trap. The *parfait* was burned at the stake in 1321. He is the last Occitan Cathar of whom we have record.

Wandering across the splendid landscape of Languedoc today, you are constantly nudged by inklings of the Cathar past. Millions of natives still speak Occitan; it is taught in many schools, and if you linger on a park bench in Toulouse or Albi, you can eavesdrop on oldsters conversing in their ancient patois. There are even indications of a new regional militancy, like that of Catalonia: spray-paint graffiti on highway signs that demand the indigenous tongue: "*En Oc!*"

Yet much about the Cathars remains mysterious. In its extirpating fury, the church burned, along with the heretics, every piece of Cathar writing it could find. We know the Cathars wrote books, but we are left with mere fragments of their thought. What would a medieval scholar give to lay his hands on the meditations of Guilabert of Castres! Our grasp of the faith of the Cathars comes chiefly from confessions wrung from their lips by Catholic torturers who execrated everything they stood for.

An enigma, then—all the more so for the gulf that yawns between their bleak yet optimistic asceticism and modern notions of heaven and earth. Yet the Cathar presence haunts Languedoc still, nowhere more vividly than in the stern ruins that crown its startling peaks. There the wind whistles through gaping archways, the sun slants across broken towers, intimating a world of redeemed and perfect spirit that we shall never see.

Displaced noblemen as well as heretics fled into these hills as Simon de Montfort scoured the region.

The last Occitan Cathar was burned at the stake in 1321, yet resentment still smolders in Languedoc.

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Barcelona '92

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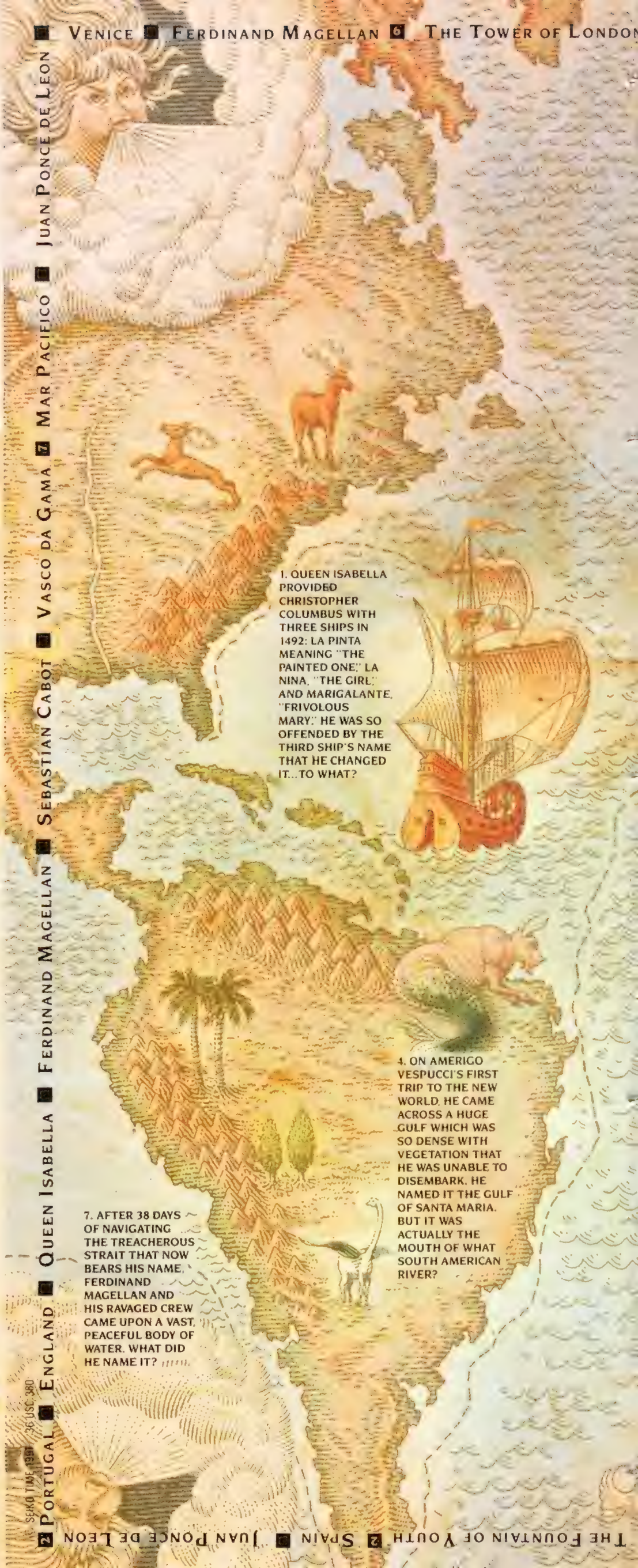

VENICE ■ FERDINAND MAGELLAN 6 THE TOWER OF LONDON
JUAN PONCE DE LEON ■ MAR PACIFICO ■ VASCO DA GAMA 7 ■ SEBASTIAN CABOT
FERDINAND MAGELLAN ■ QUEEN ISABELLA ■ ENGLAND ■ PORTUGAL 2
1. QUEEN ISABELLA PROVIDED CHRISTOPHER COLUMBUS WITH THREE SHIPS IN 1492: LA PINTA MEANING "THE PAINTED ONE," LA NINA, "THE GIRL," AND MARIGALANTE, "FRIVOLOUS MARY." HE WAS SO OFFENDED BY THE THIRD SHIP'S NAME THAT HE CHANGED IT...TO WHAT?
4. ON AMERIGO VESPUCCI'S FIRST TRIP TO THE NEW WORLD, HE CAME ACROSS A HUGE GULF WHICH WAS SO DENSE WITH VEGETATION THAT HE WAS UNABLE TO DISEMBARK. HE NAMED IT THE GULF OF SANTA MARIA. BUT IT WAS ACTUALLY THE MOUTH OF WHAT SOUTH AMERICAN RIVER?
7. AFTER 38 DAYS OF NAVIGATING THE TREACHEROUS STRAIT THAT NOW BEARS HIS NAME, FERDINAND MAGELLAN AND HIS RAVAGED CREW CAME UPON A VAST, PEACEFUL BODY OF WATER. WHAT DID HE NAME IT?
SEIKO TIME 1989 36 USC 380
THE FOUNTAIN OF YOUTH 2 SPAIN ■ JUAN PONCE DE LEON 2

CHRISTOPHER COLUMBUS ■ VENICE ■ SANTA MARIA ■ ITALY ■ PAOL NELLI ■ VASCO DA GAMA ■ THE

6. AS QUEEN ELIZABETH'S MOST FAVORED COURTIER, SIR WALTER RALEIGH WAS CHOSEN TO OVERSEE THE ANNEXATION OF VIRGINIA. NOT LONG AFTER HER DEATH, HOWEVER, HE WAS IMPRISONED AND THEN EXECUTED AT WHAT NOTORIOUS LANDMARK?

5. THOUGH USUALLY ANGLICIZED, THE BEST CLUE TO THIS EXPLORER'S BIRTHPLACE IS HIS NAME: GIOVANNI CABOTO. BY WHAT NAME DO WE KNOW HIM AND WHERE WAS HE BORN?

2. THE AGE OF DISCOVERY WAS GALVANIZED BY A SEAFARING RIVALRY BETWEEN WHAT TWO IBERIAN COUNTRIES?

3. IN 1487, BARTOLOMEU DIAS USHERED IN THE AGE OF DISCOVERY WITH HIS VOYAGE TO THE SOUTHERNMOST TIP OF AFRICA. HE PROPOSED NAMING THIS DISCOVERY, "THE CAPE OF STORMS," BUT KING JOAO II OF PORTUGAL INSISTED ON SOMETHING MORE VISIONARY. THAN DESCRIPTIVE. WHAT DID HE CALL IT?

QUEEN I. ■ LA ■ THE CAPE OF GOOD HOPE ■ SANTA MARIA ■ KING MANUEL I ■ THE AMAZON RIVER ■ FLORENCE ■ JOHN CABOT OF ITA

Sharing an 18-foot-long canvas with photographs and fabric, a kite sails across *Fish Park/ROCI Japan.*

By Helen Dudar

The artist who wants to embrace the whole world

After six years, $7 million and ten foreign countries, the Rauschenberg Overseas Culture Interchange is a dream come true

Early one winter evening, Robert Rauschenberg was to be found standing—he never sits when he can stand—in the kitchen of the cavernous 19th-century building he owns and rarely inhabits in the part of New York City known as NoHo (north of Houston Street). As always, one hand held a tall, iced glass of amber liquid. As always, the big television screen, muted and unwatched yet insistently present, played on. Rauschenberg was trying to explain what has fed a whale-size appetite for seizing and recording imagery on canvas, paper, cloth, plywood and most recently on such resonant surfaces as copper and brass. Yes, he has drawn on the ceaseless pulse of pictures from the video screen. And of course, there was tabloid photography. And, in recent years, objects frozen on film by his own camera. And, eternally, the changing view out the open window. Suddenly he remembered an art critic's comment about some American work turned out during a time when our country was at war; she said it looked as if the blood of battles had seeped under

All of the objects were gathered in Japan by Robert Rauschenberg and assembled in his studio at Captiva.

studio doors. "Who," an amazed Rauschenberg wondered, "paints with their studio door closed?"

He works and lives as if only the presence of other warm bodies confirmed existence. A conversation with Rauschenberg is invariably punctuated by physical contact: a pat, a squeeze, a hug if he has known you for more than ten minutes. For many years, Rauschenberg's art has been made on the island of Captiva, a semitropical haven off the west coast of Florida where he has accumulated land and buildings. When he works, there is always an audience—visiting friends, assistants to help with often complex processes, other members of the sizable staff paid to keep track of an overcomplicated professional life and to fend off intrusions. Of course he knows there are artists who prefer to labor in solitude. "That's because they're so crazy about themselves," he says, his mouth broadening into a kid's grin. "I'd rather have friends."

Friends there are, and a wide swath of admirers. Our nerviest explorer of the outer limits of midcentury art turned 65 last October, and the occasion seems to have inspired a barrage of celebrations: seven gallery and museum exhibitions from Zurich to New York, including a major event in Washington, D.C.; seven occasions guaranteed to wrap the artist in equal portions of pleasure and panic.

The night before the New York stop, he had been in Pittsburgh. "Pittsburgher," he called it, because the locals he encountered had persisted in addressing him as "Rauschenberger." A lifelong supporter of and participant in avant-garde dance, he had traveled there with the Trisha Brown Company, for which he had designed the sets. Just before that excursion he had been at work in Captiva, producing, in one febrile week, 17 paintings in an entirely new mode. Two days after the kitchen conversation he would be the center of a spruce crowd at the Knoedler Gallery just off Madison Avenue. There, surrounded by yards of recent Rauschenbergs and old friends, he would hug and kiss and effervesce. Although his everyday style runs to

Casually elegant, Robert Rauschenberg pauses amid an installation of his work to flash his ready smile.

neat jeans and casual shirts, he would be dressed in one of several gorgeously stagy costumes reserved for these occasions: a deep-purple silk suit. And almost no one would know that the afternoon had begun with the usual anxiety attack, the kind of physical assault that precedes curtain time, and that, after 40 years of public life, still arrives on opening day.

Purple costume and performance nerves are entirely appropriate to this man who, more than any other figure of his fecund generation, has pursued art as if it were improvisational theater. The white paintings, the black paintings, the stuffed goat with the tire around its middle, the erased de Kooning drawing, the sculpture and wall pieces assembled out of junk and cardboard boxes scavenged from the street, the "combines" with chairs or stuffed fowl or clocks or sneakers attached to canvas—they are all now part of contemporary art history. Years ago, when he was sharing life with Jasper Johns (SMITHSONIAN, June 1990), and the two of them were encouraging each other in their search for pathways out of the dominant Abstract Expressionist modes of the period, Johns, he recalls, would sometimes gaze at a new Rauschenberg and murmur, "I don't know. I think you've gone too far this time."

Each man went farther than he could have imagined in the days they lived on nickels and dreams. In the admiring view of William Lieberman, curator of 20th-century art at the Metropolitan Museum of Art, they are the two American artists working in this country today who sit atop the pyramid. Except Rauschenberg, as has been noted, doesn't sit. He darts about the globe. Unquenchably openhanded and civic-minded, he finances crusades in support of hope, charity, peace, and the marriage of art and technology. He has myriad exhibitions, more than seem possible for one artist; in 40 years, there have been more than 300 one-man Rauschenberg shows.

An endless trail of exhibitions

The Knoedler event followed the opening of a show at the Whitney Museum of American Art in New York of large, masterful silkscreen works produced from 1962 to 1964. In April, the Pace/MacGill Gallery in New York opened a show of Rauschenberg photographs. A show of serial works opens May 12 at Washington's Le Marié Tranier Gallery, and next month there will be two more exhibitions: new art at the Galerie Jamileh Weber in Zurich, and pieces from 1949 to 1953 at the Corcoran Gallery in Washington, from June 15 to August 11. The work at the Corcoran was assembled by the Menil Collection of Houston, Texas, which will begin showing it in the fall.

The centerpiece of this Rauschenberg year is the exhibition titled "Rauschenberg Overseas Culture In-

Moderna Museet, Stockholm

Monogram, 1955-59, perhaps the artist's best-known artwork, plays with the idea of weird juxtapositions.

terchange" at the National Gallery of Art in Washington from May 12 through September 2. For easy reference the show, and the project it is named for, is known as ROCI, sly homage to Rauschenberg's old pet turtle, Rocky, which can be seen and heard laboriously clunking around the New York house.

It is hard to imagine a project more quixotic and less feasible than ROCI. This was Rauschenberg's personal "nonpolitical" gesture, his way of reaching out to other lands, to peoples who may not have friendly feelings about the United States. His nomadic art project, inspired by a 1982 working trip to one of the world's oldest paper mills, in China, was meant to last four years and take him to 22 countries. When it was over, it had consumed more than six years, and he had made and shown his art in ten foreign lands. At least two million people had seen his works, and he had talked to many of them—other artists, poets, the average José or Ivan who finds joy in museums. The climactic show at the National Gallery, organized by Jack Cowart, curator of 20th-century art, includes about 150 works: ROCI paintings, sculpture, Rauschenberg's photography made for use in his silkscreen art, videotapes of the places he visited, and the premiere of a dance piece he collaborated on with Trisha Brown.

Twenty-nine works will remain with the museum as gifts, presumably for its encouragement, which is much more than the ROCI project got from the American art establishment. Actually, labeling it a "project" borders on flattery. As Donald Saff, ROCI's artistic director, summed it up recently, "It was always in a state of falling apart financially. It was received with skepticism by friends, collectors, museums, dealers. It was seen as too impractical and too expensive. It was logistically impossible in the beginning and absolutely without funds. And those are probably the good parts." Major corporations usually eager to put their names and money behind a prestigious art event were politely noncommittal. Two other museums were interested, but involvement required structure—the equivalent of telling Rauschenberg he must dine at a normal hour instead of midnight. For a brief period, ROCI had

The author, a frequent contributor to these pages, wrote about the Fauve artists in October 1990, and Freud's art collection in the August 1990 issue.

Collection the artist

Individual (7 Characters), 1982, was made in China using handmade paper prior to start of ROCI project.

a pledge of $3 million from a Los Angeles collector. The day before Rauschenberg formally announced his venture at the United Nations in December 1984, the agreement collapsed.

In the end, except for modest contributions from a couple of friends, Rauschenberg paid for ROCI himself, selling off treasured early works by Johns, Andy Warhol and Cy Twombly, and dipping into his own not-inconsiderable earnings. Saff guesses that the costs may have run to $7 million. But finances did not finish ROCI. "You can run out of friends, you can run out of love, but money you can always make," Rauschenberg says. ROCI ended because, to use his own phrase, this "weirdest, loosest artist" finally grew restless working within the confines of assigned subject matter, in this case, the look and feel of places he chose to visit. At all events, "Peace and communication and understanding has always been my lifestyle. I thought I'd made the point."

Saff, an artist, academician, master printmaker and old Florida friend, who sees Rauschenberg as "introducing the world to itself," was ROCI's advance man. He was frequently the first ROCI ambassador to travel to a chosen country, making his way through the bureaucracy, talking to artists, museum people, writers, to determine whether a show would be welcome. If the reception was cordial, Rauschenberg and an assistant would follow, move about the country, absorbing images, collecting fabrics and street souvenirs—the preliminary process of what Jack Cowart felicitously calls making "deadline art." Rauschenberg thrives on, indeed, seems to need, that kind of pressure. Back in Florida, he would turn out works in colors and imagery that reflected his sense of the land he had just visited. Then he would hurry back with a planeload of new and old Rauschenberg art, an entourage of assistants, installation materials, and barrels of white paint to coat dingy museum walls. After a show ended, each country owned one Rauschenberg commemorating the exhibition, and the participants were left with a trail of scattered memories, something like the elegantly organized clutter of a Rauschenberg silkscreen piece.

Voyaging beyond Lost Horizon

They crossed Peru off the list because, on Saff's exploratory visit, Lima turned out to be unremittingly anti-American, and his ROCI equipment vanished—stolen—in transit. They got to Cuba because Saff's brother Ed, a distinguished mathematician, happened to be traveling to Havana to lecture and agreed to get word about ROCI to the right quarters. Rauschenberg decided against South Africa when the government refused to consider linked simultaneous exhibitions in Soweto and Johannesburg. As Don Saff was leaving Tibet, a great favor was sought: Could he send a videotape of a film, set in a country patterned after Tibet, which they had been longing to see for many years, a 1937 movie called *Lost Horizon*? He did. The Mexico City catalog carried a tribute from the Nobelist Octavio Paz. The Santiago catalog bore a contribution by Chile's dissident poet José Donoso. This partly neutralized dissident forces who were unhappy that ROCI was using the national museum. Even so, there were hecklers at the opening.

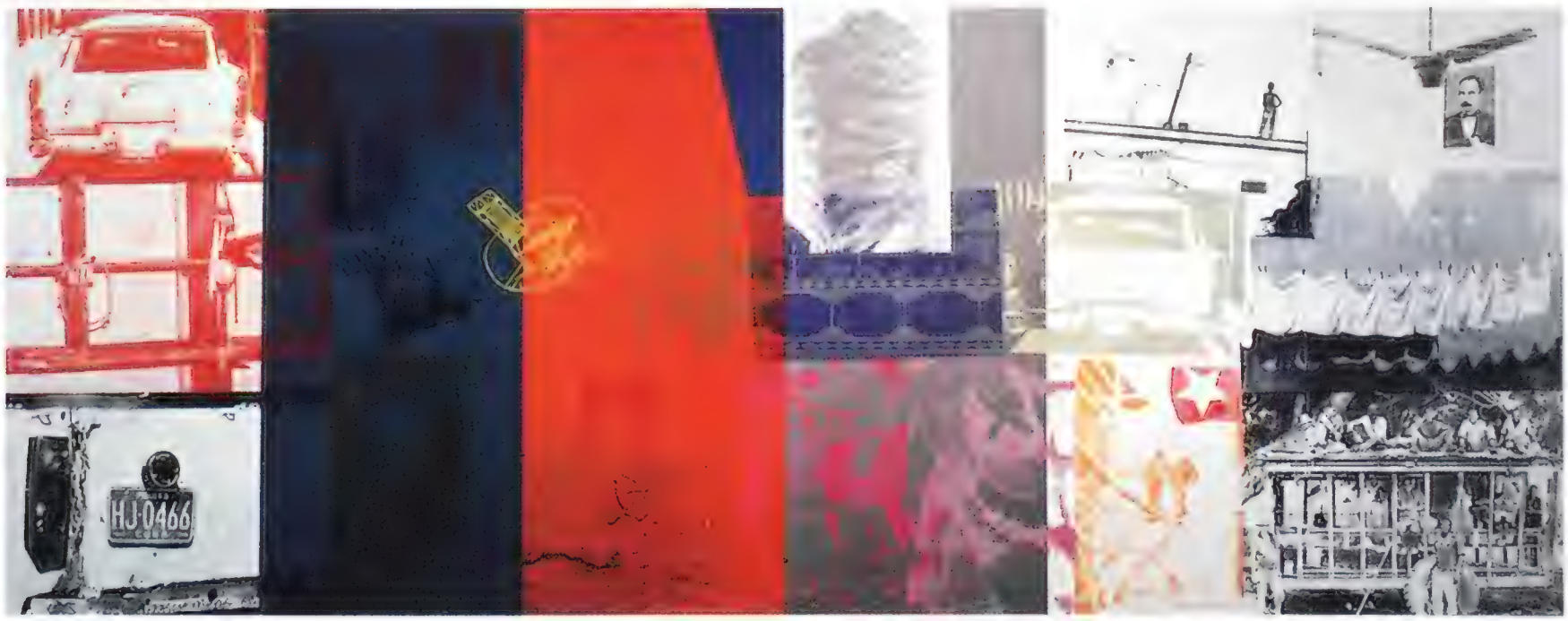
Venezuela agreed to send two air force cargo planes to transport ROCI art from Santiago to Caracas; the crew took families on the excursion, came back loaded with Chilean souvenirs, foodstuffs and only part of the show, and ROCI had to scrounge up fuel money for a second trip. Berlin was unhappy with the painting Rauschenberg left behind as his gift; it naturally reflected the grayness of the city, but the city yearned for something in more vibrant colors. Germany was the stop before Malaysia, and Rauschenberg remembers crisscrossing the globe in a state of productive confusion as he sorted out images of two very disparate cultures. In the Soviet Union, visitors traveled to the

Collection the artist

Collection the artist

Three works express Rauschenberg's impressions of countries that he visited for the ROCI project: *Altar Peace Chile/ROCI Chile* (at left), *Bunga Manggis/ROCI Malaysia* (above) and *Cuban Acre/ROCI Cuba* (below). In Chile he was struck by the role of the Catholic Church, in Malaysia by nature, in Cuba by old tail-finned American cars.

National Gallery of Art



Collection the artist

Signs (detail) is a screenprint done in 1970; it sums up the tumultuous events of the preceding decade.

National Museum of American Art

In *Reservoir*, 1961, the clocks at upper and lower left record time that the work was started and finished.

Moscow show from regions as distant as Siberia and Uzbekistan. ROCI got to Russia with the help of the late Armand Hammer, who famously knew his way around the government; the price was Rauschenberg's agreement to switch from the Leo Castelli Gallery, after more than 30 years, to Knoedler, in which Hammer had an interest.

In Beijing, the ROCI visit left people talking of "art before Rauschenberg" and "art after Rauschenberg." And in Tokyo, someone wanted to know Rauschenberg's greatest fear. It is the kind of question he loves. "That I might run out of world," he said.

The Rauschenberg world began in Port Arthur, Texas, a dank, barren, oil-refining town that reeked of petroleum. He was born Milton Ernest Rauschenberg; "Bob" would be his gift to himself when he began studying art in young adulthood. On public display, Rauschenberg is usually such a sunny spirit that a casual observer can hardly imagine a dark side. But he broods about life's insults, and resentment surfaces when he remembers his vigil at his dying father's bedside years after he had left home.

"I was the only person who could stay up for 64 hours to hold his hand and keep him from pulling the tubes out, because I'd worked in a hospital. And his last words, after he tried to pull them out again and I put them back in, were 'I never liked you, you son of a bitch.' I was like the son that should not have come up in the morning."

The memory is offered without a hint of expression on the usually mobile face. The elder Rauschenberg worked for a utility company, but life's pleasures centered aggressively on hunting and fishing. His only son was nearsighted and had no interest in snuffing out small creatures. And, he seemed to be unteachable. Indeed, he "lived in fear of education."

It was many years before Rauschenberg understood that he was not dim-witted but afflicted with dyslexia, at the time a little-understood condition that, among other visual distortions, can make reading difficult. It is a problem that he shares with a regiment of famous figures including Leonardo, Robin Williams, Raphael, and Greg Louganis. A while back, Rauschenberg savored a ceremony in Washington at which he and

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some other famous dyslexics were honored. To say that he was thrilled to be on a dais with Cher and Tom Cruise is an understatement. After a lifetime of fame, he is deeply star struck.

Back at his hotel, Rauschenberg was so excited about the day, that he fondly telephoned Dora Rauschenberg to report on it. "My mother still calls me Meelton—not Milton but Meelton." "'Isn't that somep'n, Meelton,'" he quotes her, assuming a Texas accent he has assiduously rid himself of. "'And all these years we just thought you was stupid.'"

If school was "horrible," young Milton somehow managed to sustain "a joy of living." He also managed to graduate and, by dint of intense cramming, gain admission to the University of Texas at Austin to study pharmacy, his parents' idea. School lasted until the day he was required to dissect a live frog in anatomy class. The frog escaped; he was expelled. It was 1943, and he was shortly drafted into the Navy. Anxious to avoid combat and killing, Rauschenberg trained as a neuropsychiatric technician and was assigned to a camp in Southern California to care for men who had been physically and emotionally maimed by the war.

Although he had been drawing since childhood, it was only then that he would discover that art could actually be a vocation. One day, on a hitchhiking trip from his base, he went to see the cactus gardens in San Marino. The gardens were next door to the Huntington Library, so he stepped inside. There he encountered his first *real* paintings: Thomas Gainsborough's *Blue Boy* and Sir Thomas Lawrence's *Pinkie*. Lightning struck.

Out of uniform, Rauschenberg began to soak up an education in art—from the Kansas City Art Institute to Paris to Black Mountain College in North Carolina, a brief, memorable experiment in education. At Black Mountain he would strengthen important friendships with John Cage and Merce Cunningham, study photography, and learn to rebel against his teacher Josef Albers. He had been drawn to the school by Albers' reputation as a disciplinarian, but Albers disliked his work, and he was contemptuous of Albers' finicky approach to art: that legendary figure wore an ostentatiously spotless white suit while he painted his homages to the square.

In that period, Rauschenberg met and married another young artist, Susan Weil, fathered a son, Christopher, and soon divorced. By 1951, he was tentatively settled in New York and had found his way to the Cedar Tavern, the watering hole of some of the great Abstract Expressionists of the time. By 1953 he had also publicly shown his White Paintings. They were a preview of more startling things to come. Anybody who looked carefully discovered something beyond canvas coated in white paint: the paintings reflected the light in the room as well as picking up shadows of viewers,

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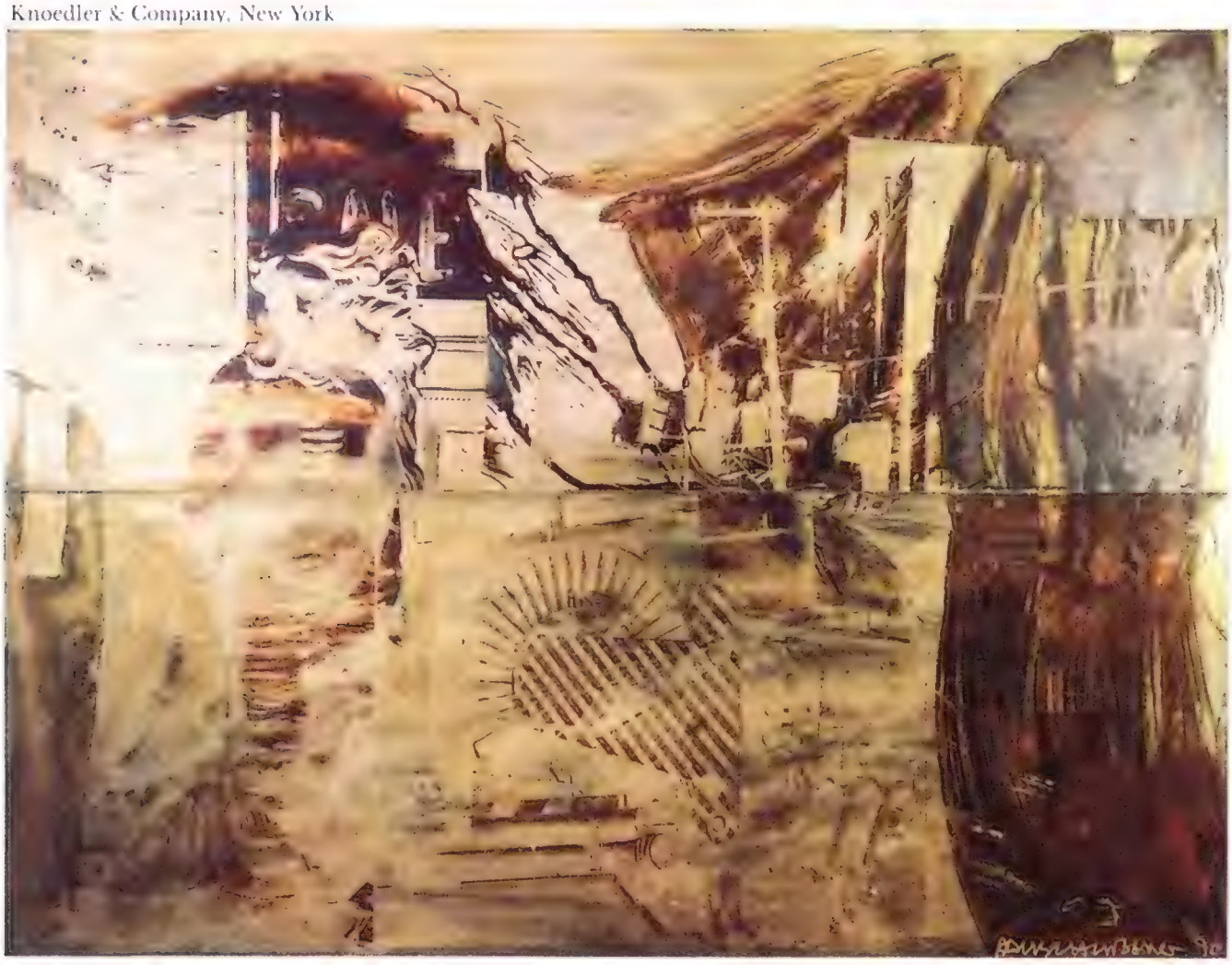

In recent works such as *City Melange* (1990), Rauschenberg uses a technique of etching on brass surface by corrosion with acids.

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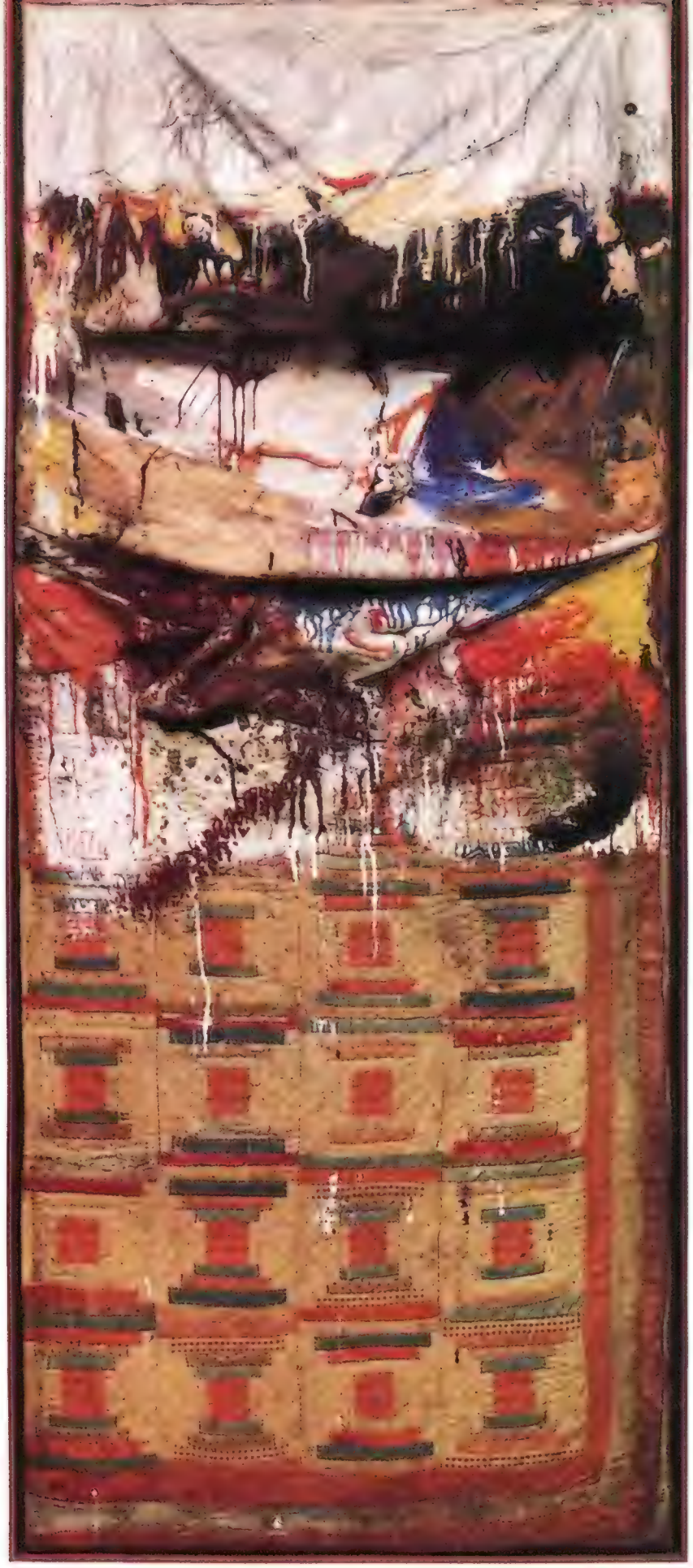


Museum of Modern A

Rauschenberg appropriated a quilt from artist friend Dorothea Rockburne for *Bed*, his first "combine."

inviting the surroundings into the work. Time and again, in similar fashion, Rauschenberg would compel the onlooker to collaborate in his art.

Reviewing his career in later years, some critics would assume that he had set out to invite notice by shocking the art world, a sort of born-again Dadaist wreaking havoc on contemporary values. But Rauschenberg was no ideologue, and his motives were less decipherable. "I pushed the White Paintings through because it was both a reaction to the Abstract Expressionists and a hangover from Josef Albers," he says. "I had been brainwashed by Albers to where nearly nothing was possible. I just wanted to see how far you can go. All-white paintings were physically as close as I could push to the extreme. And I was a little bit disappointed because they were still something that had a *presence*."

Then he made the all-black paintings, a good example of what Rauschenberg likes to call his "schizophrenia," a rather hyperbolic description of an antic sensibility. Of course there are recognizable swings to his interests. Roni Feinstein, who organized the Whitney show, observes that years ago, using materials scrounged from window-decorating work, he produced a series of luscious collages in gold and silver leaf. They were snapped up for Christmas gifts. Yet at the same time he was also making less-salable art confected out of wispy stuff resembling toilet tissue.

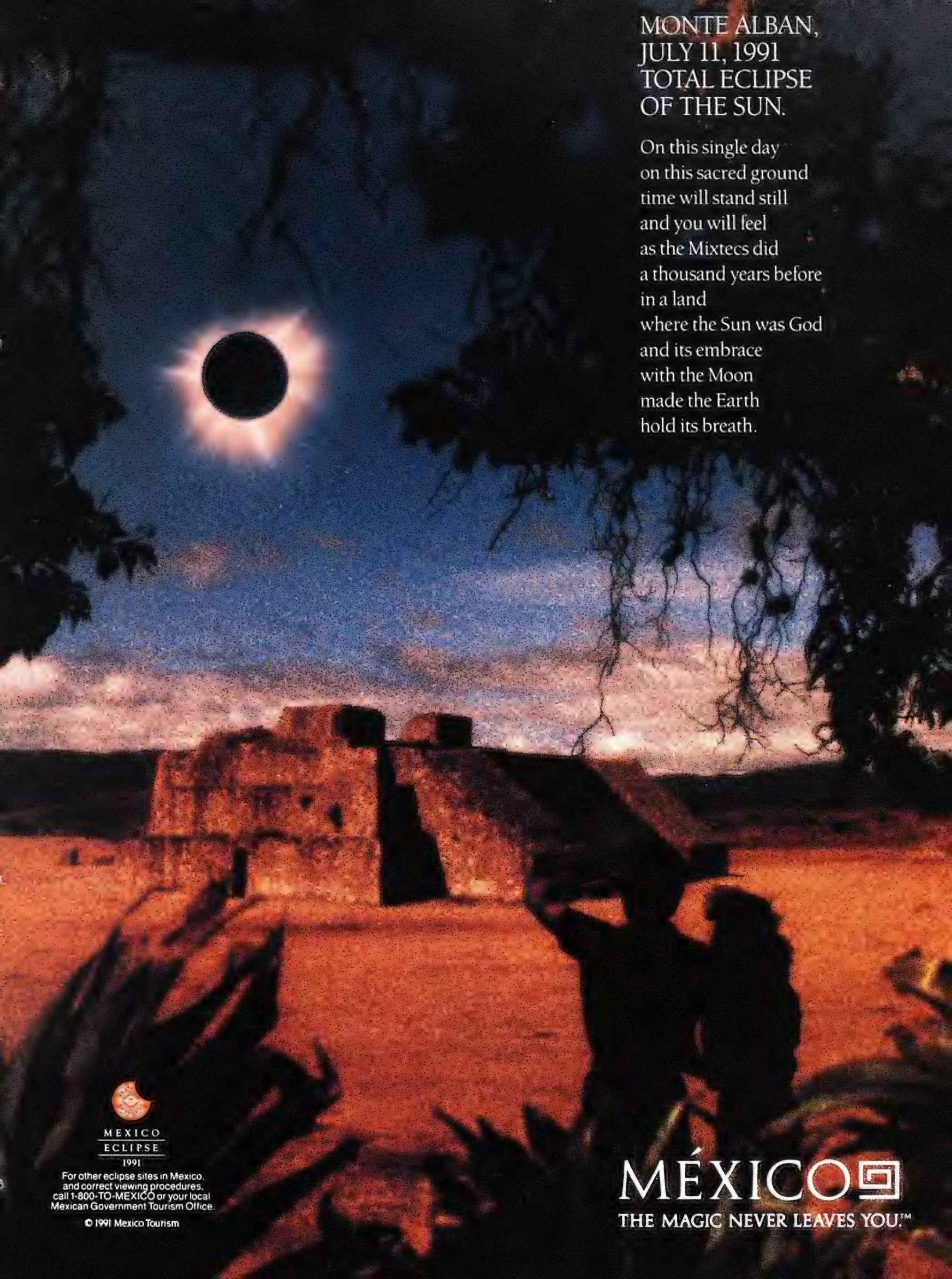
Ghostly surfaces that require concentration

He may spend months or years turning out paintings crowded with images and aflame with color. Then one day he will set to work on studiously quiet, nearly monochromatic pieces. Some of his most recent works, for example, are a counterpoint to the excited bursts of color in the ROCI series. The surfaces—copper, bronze, brass—are rich and mysterious; their images are often etched into the metal without color and are so ghostly that they require hard concentration to be read. And again, the room and the viewer are pulled into the work.

Rauschenberg likes to boast that he does not repeat himself. Still, he frequently uses a pattern of design that Nan Rosenthal, a National Gallery curator and Rauschenberg scholar, calls "the syncopated grid composition." A Rauschenberg grid work will be neatly divided into rectangular sections. But some images will be set into the grid spaces askew or sideways or upside down. Some elements will jump out at the viewer while others recede into the wall, and the whole affair becomes a deft balancing act between order and chaos.

In Rauschenberg's early days in New York, finances were so precarious that, lodged in quarters without proper bathing facilities, he would go to parties in order to lock himself in the bathroom and take a fast shower. By the mid-'50s, his earnings had been improved by freelance jobs decorating Tiffany's windows, work he soon shared with Jasper Johns. They were an odd pair, the ebullient Rauschenberg, prone "to drown myself in everything around me," and the reserved, rigorously intellectual Johns who, somebody once said, kept a "keep out" doormat outside his door.

One day, Leo Castelli, who was starting a new gal-



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lery, came to see Rauschenberg's work and stayed to thrill to Jasper Johns' art. Johns got his big show in 1958; it was an instant success, a virtual sellout. Rauschenberg's exhibition two months later was a succès de scandale, attracting more notice than sales. One of the gallery visitors was an old friend, Dorothea Rockburne, yet to make her own mark as an artist. She stood amazed with delight before a familiar object, soon to be one of the most famous works by Rauschenberg. At Black Mountain in the early '50s, she, Rauschenberg and Cy Twombly had been buddies. When her daughter was born, a teacher had marked the event with the gift of a fine regional quilt. She left it too long in the dryer of the communal laundry room, and it disappeared.

The next time Rockburne saw her quilt, it was hanging in Leo Castelli's gallery. "It was the first art of appropriation," she quipped later. As legend now has it, Rauschenberg had awakened one morning wanting to paint but without funds for canvas. So he had stretched the quilt on a frame, and added sheet, pillow and drips of color. At least one critic thought *Bed* echoed tabloid photography of bedroom murders. Rockburne, a woman without rancor or jealousy, found it "profound, beautiful and wonderful," a celebration of a place central to human life and human drama. Later, yet another critic would point out that the serial pattern of the quilt squares also managed brilliantly to evoke both rural domesticity and the abstract art that Rauschenberg had rejected.

Six years later, at the age of 38, Rauschenberg became the second American in history to win the Venice Biennale international prize. The applause was not universal. In fact the award stirred intense jealousy among some of his fellow artists who thought that Rauschenberg had pulled some strings or that Castelli, who had become a major figure in the art world, had somehow maneuvered the event.

By then, the Rauschenberg-Johns relationship had ruptured, with such bitterness that for years mutual friends avoided mentioning one to the other. Castelli speculates that possibly Johns felt a need to free himself from Rauschenberg's powerful personality. Eventually, a patchy kind of peace between them was achieved. They run into each other at art events and they are on speaking terms—or would be except, as Rauschenberg observes, "we practically have nothing to say to each other."

Rauschenberg does not read unless driven to print by the demands of art. When he wanted to turn out a series of paper works on Dante's *Inferno*, Rauschenberg bravely made his way through the John Ciardi English translation. More often, people read aloud to him: during some passages of Mary Lynn Kotz's recent biography, *Rauschenberg/Art and Life*, he was, she was told, moved to tears.

On the other hand, he has a conspicuous verbal dexterity, a gift for puns and phrases that are catchy even when they don't entirely make sense. Years ago, his contribution to a group-show catalog was: "Painting relates to both art and life. Neither can be made. (I try to act in that gap between the two.)" The statement has been repeated ad nauseam, although nearly two decades after he composed it he laughingly admitted to an interviewer that he no longer remembered what he meant by it.

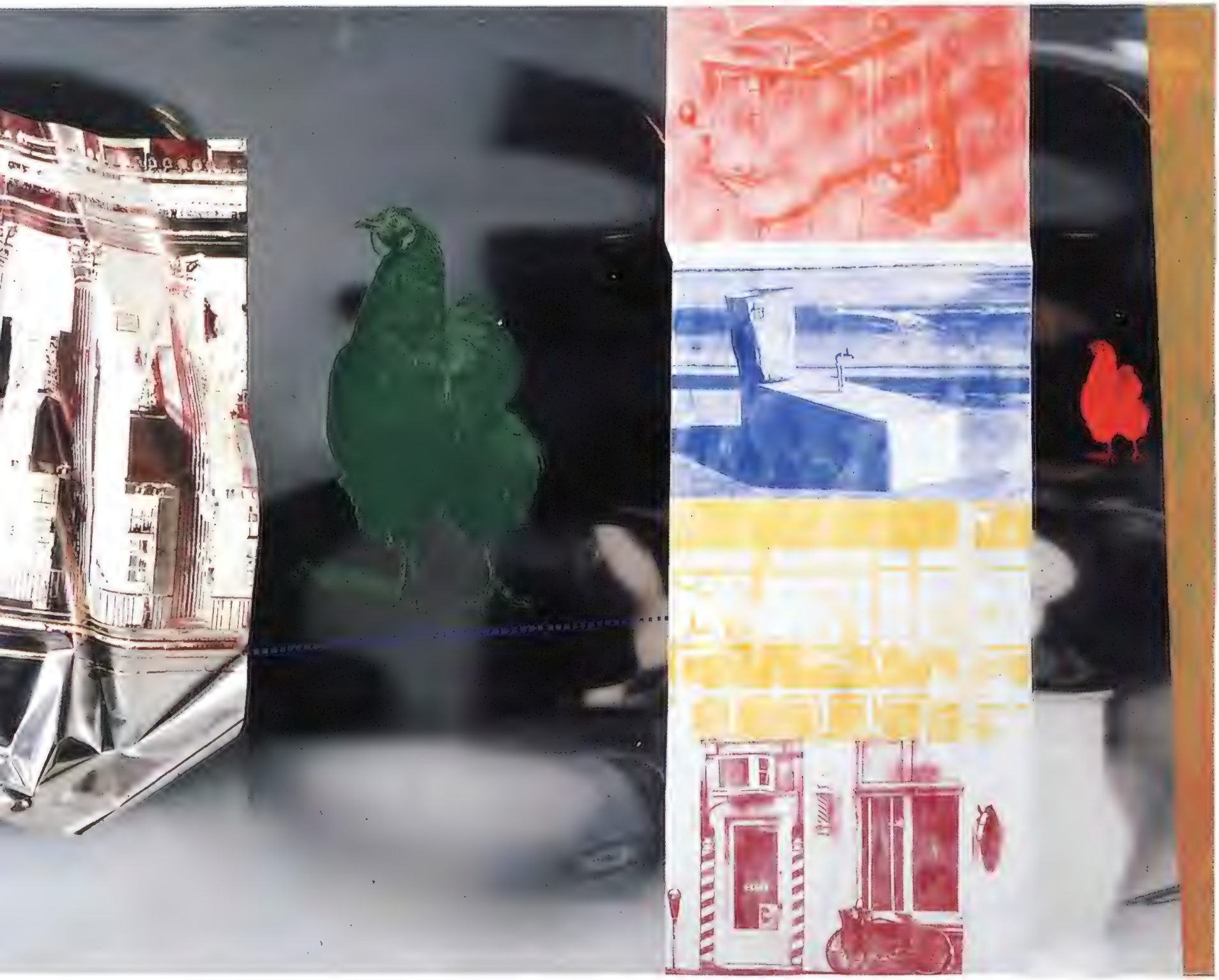
Mirrored surface of *Washington's Golden Egg/ROCI USA (Wax Fire Works)* draws the viewer into the work.

His impact on other artists is incalculable. James Rosenquist, an old friend, says that Rauschenberg gave his generation of pop artists courage. "He is a risk-taker. Those boys who came before—Rothko and Newman and de Kooning—they all saw art with a capital *A*, almost like a religion. When I saw Bob's early work, I really felt opened up. Nothing was sacred; nothing was 'high art.' "

What impresses Rosenquist is that Rauschenberg has managed to avoid the lulls in creativity that often afflict artists in late middle age. He has never stopped, even when, perhaps, he should have. Once, Rosenquist was visiting Rauschenberg on Captiva, and at the bibulous hour of 3:30 A.M.—Rauschenberg seldom retires before sunrise—they walked over to the studio building to examine recent works. "There were beautiful things on the walls. And then on one wall he's got six bamboo poles with strings tied to tin cans." Rosenquist could not conceal his bewilderment. In a booming bourbon-fueled voice, Rauschenberg said defensively, "Now, you put a lot of things on the wall before you know what they are, too."

Often, he seems to drive himself with inspired sloganeering, statements that have helped build a personal mythology. That winter night in New York after Pittsburgh, he got to talking about the useful confusions of the ROCI travels, of his need to work in different places with different people and in different media. If he was scared of anything, he said, it was the notion that any single activity would ever be *the answer*. So, he was asked, is he better off with questions? Yes, he said, yes he is.

Collection the artist



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The much ballyhooed announcement of cold fusion turned out to be a proverbial tempest in a teapot.

By Stephen P. Maran

Science is dandy, but promotion can be lucrative

Making a discovery is only half the battle: announcing it to one's advantage is the next step for the scientifically ambitious

Making a major discovery in science is only the first step to fame and fortune, necessary but not sufficient. Almost as important are the how, when and where of announcing your breakthrough. Do it right and you may be fixed for life, or even become a household name. Slip up and you will slink away from the snickers of your colleagues and, worse, the wider world of newspaper readers and television watchers.

The most ballyhooed discovery of our time (apparently false, it turned out) was the announcement at the University of Utah that two scientists had achieved nuclear fusion in a glass jar on the laboratory equivalent of a kitchen table. Controlled fusion is a holy grail, the promise of nearly infinite, clean and cheap energy. Until the Utah story broke, most scientists had been struggling ahead the only way they knew how: re-creating the unimaginable temperatures and pressures inside stars to achieve fusion. The news that it could be done at room temperature and pressure was a bombshell.

Calling in the press—and calling Congress

The two scientists, Stanley Pons and Martin Fleischmann (the latter from the University of Southampton in England), broke academia's cherished unwritten rules in announcing their discovery and paid dearly for it. Instead of waiting until a full account of their experiments was published in a scientific journal, they called a press conference. Worse, with the aid of lobbyists they appealed to Congress for direct appropriations to fund their research. The work was so important, they said, that they should have their own instant institute.

Modern-day science does not work that way—most of the time. Results are vetted before they are announced. A paper submitted to a journal is passed first to several referees, people working in the same field who can judge the results being reported. Only if it passes muster is it accepted for publication. Raising money works the same way. Proposals are steered to referees for judgment before a granting agency writes a check. You may get away with breaking the rules if your findings are instantly recognized as correct. But there is all the difference in the world between the sweet smell of success and the odium of highly publicized error.

Bruce Lewenstein, a historian of science at Cornell University, told me at least two scientists were so irritated by the appeal to Congress that they let it be known they would "slam Pons and Fleischmann against the wall." A prominent physicist, Robert L. Park of the American Physical Society, refused to attend a luncheon at which Jerry Bishop of the *Wall Street Journal* was awarded $3,000 for his coverage of the cold fusion story.

Anger at publicity is not new in the scientific world. American astronomer Harlow Shapley expressed strong disapproval of Robert Millikan, the physicist who measured the charge of the electron in 1910. In *The Diary of H. L. Mencken*, Shapley recounts a devastating saying about Millikan that he attributes to the Nobel-laureate chemist Sir Ernest Rutherford. "Rutherford said that publicity grabbing has become one of the learned sciences and a great force in modern life, and that it has become necessary to set up a unit to measure it. This unit, he said, is the kan. It is, however, so large

The lucky researcher who has made a big discovery is well advised to orchestrate the attendant hoopla. The tactics of announcement can be as important to a career as was the strategy of the experiment itself.

Illustrations by John Huehnergarth

An important discovery is often immediately translated into the lifetime security of a tenured professorship.

that it has become necessary to resort to a workable fraction of it. This fraction is the millikan."

As a scientist myself, I have seen many erroneous "discoveries"—including one of my own—greeted with substantial publicity. In some cases reputations survive with little damage; in others the unfortunates become objects of derision. Much depends on how the discovery was announced. It can be OK to be wrong; but to jump the gun and be wrong as well is unforgivable.

At the bridge table, the player who opens the bidding may not be the one who wins the hand. But in science, the first announcement—the opening bid—establishes priority, thereby diminishing the future claims of a competitor who is rumored to have made similar findings. For a young university scientist, priority in an important discovery can make the all-important difference between being awarded tenure and being out on the street.

Young or old, once you make a big discovery, you can hit "the circuit"—speaking at meetings held in the nicest resorts, addressing rapt graduate students and envious faculty at every ivied campus that can come up with a fat honorarium. Government grants are easier to come by, which translates into more money for the staff who keep the Bunsens burning while the boss is on the road.

Perhaps just as significant, priority can decide who reaps the financial benefits of a new discovery. A month after Pons and Fleischmann made their announcement, Bishop reported, 40 companies had signed agreements with the University of Utah to inspect patent applications based on the scientists' work.

In my own field of astronomy, it is easy to list cases in which the way discoveries were announced, and the motives of the discoverers, would fail every test of modern scientific protocol. Astronomers, dare I reveal it, made announcements in ways calculated to bring them maximal credit, priority and even (lean closer for this) personal gain.

When Galileo introduced his improved telescope, he touted its potential use for long-range detection of enemy ships. As a result, he was granted tenure in his professorship and a hefty raise. When he discovered the four large moons of Jupiter, he hoped to cash in on that application as well. His discovery revolutionized astronomy. Until then, dogma held that everything in the sky revolved around Earth. But here was an indisputable case of celestial bodies orbiting another celestial body. It would be the model for Galileo's heretical thesis that Earth moves around the Sun.

One of his concerns in announcing his discovery, however, was to make the most he could out of it. Galileo agonized over whether to call the moons the "Cosmian Stars" after the rich and powerful Cosimo de' Medici, or the "Medicean Stars" after Cosimo and his three, similarly wealthy brothers. Which would bring him the most money? He sought advice from Cosimo's secretary and eventually opted for the second choice. Today they are known as the Galilean moons.

Even before telescopes, astronomers knew the importance of publicizing their research. The 16th-century astronomer Tycho Brahe measured the positions of planets so exactly that Johannes Kepler was able to work out the laws of planetary motions. Brahe equipped his lavish observatory (he once bragged that it had cost the king of Denmark a "ton of gold") with more than scientific instruments. He put in a printing press to bang out announcements of discoveries. Other early astronomers—Regiomontanus and Peter Apian—did the same. Long before anyone had dreamed of the mimeograph or the fax, astronomers were skilled at getting the word out.

Every rule has its exceptions, and astronomy is no exception. Some astronomers had to learn how to make a discovery announcement. William Herschel was that pleasant rarity among great scientists, a very modest person. When he discovered the planet Uranus, in 1781, with a homemade telescope from his home in Bath, England, he did no more to publicize it than to mention it to a friend. The friend wrote to the Royal Society, then as now Britain's leading scientific group, in London. The Society knew the importance of good PR, whether or not the phrase had yet been invented.

Frequent contributor Stephen Maran is editor of an encyclopedia of astronomy and astrophysics, to be published by Van Nostrand Reinhold in the fall.

At that time Herschel was a professional musician and only an amateur astronomer, one who had a knack for building telescopes. Members of the Society realized that Herschel could advance the art of telescopes, if only he could devote full time to it. They arranged for him to meet with King George III, who soon after awarded Herschel a stipend and made him a royal astronomer. Herschel went on to build the great telescopes of his age and to make important discoveries, including the deduction that the Milky Way is shaped like a disk or lens, and we are inside it.

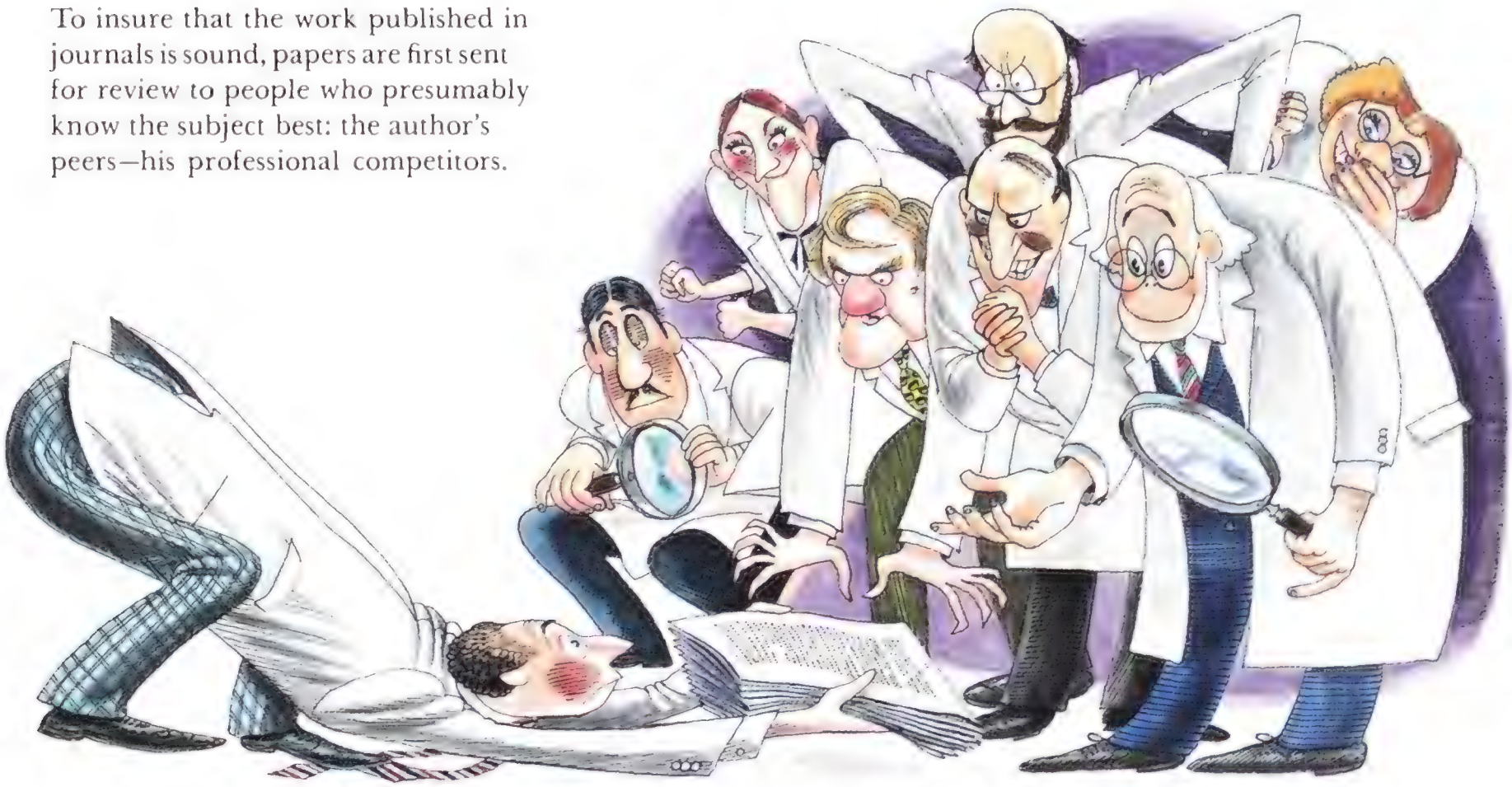
Herschel had to be prodded into self-promotion, and we admire his modesty. And yet too much modesty can hold up the progress of research. A good example is the discovery of Neptune. Its existence had been deduced from the motion of Uranus, which seemed to be affected by the gravitational pull of a planet beyond it. This conclusion was reached and announced independently by two young mathematical geniuses, John Couch Adams in England and Urbain Jean Joseph Le Verrier in France. But they lacked the personal printing press of Brahe, the self-promotion skills of Galileo and the intercession of the scientific establishment that Herschel enjoyed. Adams and Le Verrier were given short shrift by the scientific leaders in their respective lands. On at least one occasion when Adams went to show Britain's Astronomer Royal his most recent calculations on the existence of Neptune, he was turned away by the butler.

Treated little better by the leading astronomers of France, Le Verrier was finally reduced to the ignominy (for a Frenchman) of writing to Germany for help. Even then, his claims might have been ignored at the Berlin Observatory had it not been the director's birthday when the letter arrived. While the director went home to party with his family, two low-ranking young astronomers seized the chance to use the observatory's 9-inch refractor to search for the purported planet. In less than an hour they found the blue disk of Neptune. The scientific establishments of England and France, which had ignored the evidence for Neptune's existence, began a cross-Channel war of words over whether the English or the French deserved the credit for what the Germans had finally found.

The fine line that present-day scientists walk between self-aggrandizement and progress-slowing shyness involves more than the niceties of etiquette. Hasty announcements draw intense criticisms, but so do delays. In AIDS research, for example, some activists are demanding that new drugs be made available to patients before proof of their efficacy is published in peer-reviewed journals. Even in a field like astronomy, where no finding is likely to help or harm the public health, those who sit on discoveries too long are likely to be criticized.

When the discovery of the planet Pluto was announced by Lowell Observatory in 1930, for example, some astronomers were upset to find that it had been kept secret for at least three weeks. Ostensibly this was done so that the glad tiding could be reported on what

To insure that the work published in journals is sound, papers are first sent for review to people who presumably know the subject best: the author's peers—his professional competitors.



When he discovered the moons of Jupiter, Galileo hoped to cash in by naming them for the Medici.

would have been Percival Lowell's 75th birthday (and the 149th anniversary of Herschel's discovery of Uranus). It was Lowell, after all, who had endowed the observatory, predicted the existence of a planet beyond Neptune and launched the search (see *Phenomena*, page 32). Critics suspected there was a second motive: by keeping the discovery quiet, the Lowell astronomers could track Pluto and be first to calculate an orbit for it. Had the discovery been announced immediately, institutions with more-suitable telescopes might have run circles around Lowell Observatory's orbit-determining capabilities. Apparently there was no thought of naming the new planet for a king or president, although Lowell's widow is said to have floated the idea of naming it Constance, after her.

Astronomers often cite pulsars as a prime example of a discovery that was kept secret too long. Pulsars are rapidly spinning collapsed stars, only a few miles in diameter, from which we receive regularly spaced beeps of radio emissions. At first the Cambridge University astronomers who discovered them suspected the beeps might be radio signals from alien civilizations. Although found by graduate student Jocelyn Bell in the summer of 1967 and confirmed that fall, the first one was not announced until late February 1968. The radio telescope used by Bell and Antony Hewish, the professor who supervised her work and later received the Nobel Prize, was ideal for finding pulsars, but telescopes elsewhere were much better suited to studying them in detail. Thus when the half-year delay between detection and disclosure became known, other researchers suspected that the delay was designed to allow the Cambridge astronomers to cash in on their discovery without fear of competition.

"Ruthless suppression of a discovery"

Thomas Gold, the Cornell cosmologist who was then director of Arecibo Observatory, home of the world's largest radio dish, told me last year, "It has been said the pretense was made that they sat on [the discovery of pulsars] to avoid frightening the world [with the possibility] that there were alien men." Frank Drake, a distinguished radio astronomer at the University of California, Santa Cruz, adds that the pulsar secret was "an example of a ruthless suppression of a discovery, a matter of insuring 'credit' in all caps [capital letters]."

Then there are the discoveries that are not kept quiet long enough to be confirmed, and that often are promptly disproved. I had a brief taste of heady fame in mid-1968 when colleagues and I at Kitt Peak National Observatory in Arizona thought we had found visible light coming from a pulsar. Shortly after we detected these extremely faint emissions with a 50-inch telescope, the moon became full, making the night sky too bright to continue the observations. The first pulsar conference in the United States was about to convene in New York and my announcement there of our findings made a small sensation, not to mention the *New York Times*. Best of all, a competitor who used the 120-inch telescope of Lick Observatory in California was reduced to reporting his confirmation of our discovery with supposedly better evidence from a bigger telescope. At the next dark of the moon, astronomers around the world trained their telescopes on the location of our visible pulsar, but no one ever saw it again. We had, for good reason, jumped too soon. I have often felt that the Californian's confirmation may have saved my professional neck.

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Streaking "mystery spot" reported leaving scene of Supernova 1987A has not been spotted since. But those who reported it haven't suffered: while the star was blowing up, every minute counted.

Yet seemingly premature announcements of some astronomical discoveries are, I think, absolutely essential. Take Supernova 1987A (SMITHSONIAN, April 1988). Here was the closest exploding star in almost four centuries. It was changing noticeably, day by day, even hour by hour. Every new development was of extraordinary scientific interest. No astronomer dared keep findings secret, not only because each wanted to be the first to announce a valuable observation, but also because as Earth turned, the supernova became lost from view at any given observatory for precious hours. To follow rapidly changing phenomena, astronomers had to alert one another about what to look for. Thus, among the dozens of accurate reports there were inevitably, in all the wild excitement, some premature ones. It was announced, for example, that the supernova was of Type I, meaning that it was one component of a double star. Within a day or so, it was clearly seen to be a Type II, the explosion of a single, massive star. About the same time, one observatory announced that the blue supergiant star Sanduleak -69°202, which was at the precise position of the supernova, was still there, that it had not exploded. Within weeks, this was found to be exactly wrong: it was indeed Sanduleak that had gone boom in the night. Two observatories on two different continents detected a "mystery spot" emerging from the supernova. Possibly a blob of gaseous matter, it was said to be moving away from the supernova at a hefty fraction of the speed of light. No one has seen the mystery spot lately, however, and many astronomers now think it never was.

Theory predicted a newborn pulsar would appear in the ashes of the supernova, and indeed one was announced by a team of U.S. astronomers to great fanfare in February 1989. Unfortunately, they could not find it again, and the "pulsar" was subsequently identified as a spurious signal from a television camera used to help guide the telescope. It took them about a year to find the problem. Had they kept quiet, they would have felt better now, but what if the discovery had been real? Months would have gone by during which a rapidly changing new pulsar, slowing down because of gravitational and magnetic effects still poorly understood, would have been available for study by only one group of scientists. Much more would be learned if more talent and telescope glass were turned on the pulsar.

Since the mid-1980s there has been a spate of apparently erroneous or at least premature announcements of the discoveries of planets around other stars or of brown dwarfs, hypothetical objects that fall between our definitions of planets and stars. In one highly publicized case, announcement of the detection of a planet orbiting another star led to an embarrassing exchange of press releases. First, astronomers at the University of Arizona reported in a press release issued by the National Science Foundation that they had discovered the planet, named VB8B. Then the U.S. Naval Observatory declared that VB8B was no planet, it was a brown dwarf, and Navy observers had discovered it, not the Arizonans. Within a few years VB8B was an orphan, however, because both groups' observations turned out to be unverifiable. Since then one observatory team after another has proclaimed "the best evidence yet" for new planets or brown dwarfs. In every case so far, however, the claims have either been discredited or are considered to require further proof by other astronomers.

Despite these setbacks, astronomers are planning how to announce what would be the greatest astronomical discovery of all time: the existence of other civilizations in the Universe. Radio astronomers have brought breathtaking technology (for example, receivers that simultaneously scan more than 14 million frequency channels) to SETI, the Search for Extra-

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terrestrial Intelligence. No alien broadcasts have been heard, despite what you read in the supermarket, but investigators in the United States, the Soviet Union and other countries have drawn up a protocol that establishes how to make the momentous announcement.

Jill Tarter, a noted astronomer with the SETI Institute in California, told me last July: "This detection will be so incredible that we really need to prepare the public and the scientists as well. Some of the protocol is a suggestion of how the data should be disseminated with the help of an international committee. The rest says, 'Come on, guys, use common sense.' "

A key point is exchange of information with other researchers before any announcement is made. This means that what appears to observers in California to be the morning sign-on of the Arcturan Broadcasting System, for example, might be determined by other experts to be just an unusual form of man-made radio interference.

It all sounds good, but I wonder whether observers who feel they may have made the greatest discovery in the history of astronomy would really take the chance of letting others in on the kill. It was this suspicion that had led me to Frank Drake. He had directed Project Ozma, the first scientifically sound effort to detect radio signals from alien civilizations, back in the 1960s. The formula he drew up to estimate the probabilities of other civilizations existing is known the world over as the Drake equation.

When I arrived, Drake was deep in conversation on the telephone. "It hits the atmosphere at Mach 20 [20 times the speed of sound]," I heard him explain, although I never found out what "it" was. One of Drake's two daughters was zapping alien life forms that marched across a computer screen. A less-acute visitor might have mistaken this for a video game, but I deduced at once that it must be the latest educational tool. On the office wall, a hooked rug portrayed the symbolic message that Drake once beamed toward the stars, in case an extraterrestrial civilization might some day receive it.

Drake told me that when it comes to wondering how quickly a SETI researcher would announce the discovery of all time, I am not alone. He, too, doubts that astronomers beside themselves with having received a message from space would privately pass the news along to competitors for verification, as the protocol specifies. "I have always felt it is a fantasy," Drake said. "Anybody who finds what appears to be an intelligent signal will not call his nearest rival."

Of course, the "his" might be a "her." Jill Tarter, for one, intends to follow the protocol. "Prudence and skepticism are called for," she says. After cold fusion, that's not a bad idea.

If you were the first astronomer to pick up alien radio signals, would you immediately tell the world? Existing protocols demand exactly that, but some in the field expect that human nature (*shhh!*) will prevail.

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M A C H I N E J A G U A R

By Dora Jane Hamblin

For the gourmet and gourmand, bounty from Italy

It's cheap, it's chic and it's healthy, so grab your fork, dig into a steaming plate of pasta, and guarda! *it's a gustatory delight*

American Italian Pasta's huge pipe labyrinth takes the semiprocessed durum to be purified into semolina.

Long ago, before she went off to Hollywood and became an international sophisticate, Sophia Loren used to save her most sultry glance, her most seductive stride, as prelude to the announcement: "All you see, I owe to spaghetti."

At about the same time a photographer friend of mine, an Italy lover and bon vivant, could hold forth for half an hour on the therapeutic qualities of the water in which spaghetti had been cooked. "Drink it," he said, "it is the best tranquilizer in the world."

Well, probably nobody can vouch 100 percent for either of the above, but on the evidence health-faddish Americans have taken pasta to their hearts and stomachs, convinced at last that it will fill their gustatory and nutritional needs without going straight to hips and waists. Per-capita consumption, according to the National Pasta Association, is approaching 19 pounds a year (precooked weight), up from about 11 in 1975 and destined to achieve 30 by the year 2000. That's a lot of pasta. Not to be compared with Italy's 60 pounds per capita per annum, but closing in.

The fact is that Americans have discovered what Italians have known for centuries, that pasta is relatively inexpensive, easy to store, quick and simple to

Mixed with water, it becomes paste, ready for the different extrusions that turn out all the pastas in the foreground, and more. End result could be tasty dish opposite: pasta with garlic, oil and hot red peppers.

prepare, infinitely variable in size and shape, non-fattening, and at least as protein-rich as other staples such as rice, potatoes or bread. A generous portion of pasta, without sauce, contains about 220 calories and provides, if it is top quality, 10 percent of the daily recommended dosage of protein, 30 percent of thiamine, 10 percent of riboflavin, 15 percent of niacin and 10 percent of iron. Calories come with sauces: a good dollop of butter adds 75, a sprinkling of cheese another 60. For calorie counters there are a host of non-fattening sauces of tomato, mushroom, onion.

Those who cling to the notion that the stuff is fattening will no doubt be horrified to learn that one of the few Italians who ever agreed with them was—brace yourself—Benito Mussolini. In the early years of Fascism he allied himself with a "futurist" writer called F. T. Marinetti who proclaimed that pasta made people fat, lazy and somnolent. Mussolini wanted his folks to be lean and mean and combat-ready. He seems to have forgotten that Napoleon, no slouch as a warrior, became a passionate devotee of pasta with Parmesan when he invaded Italy. As for the sycophants of both Mussolini and Marinetti, having shouted "*Evviva!*" ("Long live!") in the piazza, they went straight home

Photographs by John Dominis and Enrico Ferorelli

Cheap, chic, healthy—it's pasta

Lasagna emerging from American Italian press is on way to dryer. Kara Berry helps keep plant spotless.

and sat themselves down to heaping plates of pasta.

Much of what the world thinks it knows about this dish (or dishes, for they are myriad) is a bunch of baloney (from Bologna, the north-central Italian town that is alleged to have invented this rather inferior meat). Chief among the myths is that Marco Polo brought it home to Italy from China. It is true that the Chinese were eating something like pasta 3,000 to 5,000 years ago (experts quarrel about the date), and it seems also true that Marco Polo saw them eating something he thought looked like the noodles he knew. Perhaps the chroniclers of the time were just overexcited. They also claimed he had reported he'd seen snakes wearing eyeglasses.

However it was, the myth is too appealing to die. A 1938 movie starring Gary Cooper as Marco Polo had him pointing to a dish and asking his Chinese host what it was. "In our language," the actor proclaimed solemnly, "we call it spa-ghet." The meticulous records of the old city-state of Genoa refute the tale. There in 1279 a notary handling the will of a militiaman named Ponzio Bastone duly recorded that one item in his estate was a *bariscella plena de macaronis*, a basket or chest full of macaroni. This was some years before Marco Polo came home, and a sign that pasta was a known and valuable commodity.

Whence? Multiple theories of evolution

Actually the origin of the food is so lost in time and controversy that probably nobody knows it for sure. Upon paleobotanical evidence, a form of wheat mixed with water was consumed in Mesopotamia millennia ago. Some food historians believe it began in today's Ethiopia, which had as a native crop the fine hard wheat called *Triticum durum*, from which the best pasta is still made. Others opt for Persia, some for Greece—on the theory that the word *maccaroni* came from the Greek *makar*, meaning "blessed," as in sacramental food. Today's favorite theory is that pasta came from somewhere in the Arab world. Properly prepared, it would have been the perfect staple to carry on camelback for days or weeks on end, easily reconstituted at the first handy oasis. There is some etymological evidence to support this theory: in the 12th century an Arab geographer reported seeing pasta in Sicily that was called *itriyah*, an Arabic term meaning "fragrant." The word *trii* is still used in Sicily and southern Italy to mean "pasta," and even in northern Italy a favorite dish is *ciceri e trii*, "chick-peas and pasta."

Which brings us to macaroni. Though *spaghetti*, "little strings" in Italian, is now virtually the all-purpose word for pasta, the common term was for a long time *maccaroni*, now reserved for the bigger, hollow, tubular form. Giovanni Boccaccio, in the 14th

After Soviets' visit, Richard Thompson (green jacket) sent 40,000 pounds of LaBella to a Moscow orphanage.

Myriad fanciful shapes of pasta, as well as the more traditional, were included in the shipment to Russia.

century, included in his *Decameron* a contemporary gourmet's dream: a mountain of Parmesan cheese with people on top pouring gobs of macaroni and ravioli down the slopes. Four centuries later composer Gioacchino Rossini, stranded in Paris amid acclaim for his work, wrote home and signed himself ruefully "*Rossini senza maccaroni*"—"Rossini without macaroni." One of the more hilarious scenes in Italian opera, in Rossini's *The Italian Girl in Algiers*, in fact involves the lecherous Mustafa, Bey of Algiers, who is lured by the protectors of the saucy lady of the title into such an orgy of pasta-eating that he goes into surfeit-shock, and the lady and her cohorts escape. The lure to Mustafa was that he would be introduced into the most select Italian order of Pappataci. This isn't a word that turns up frequently, and though the distinguished opera writer John W. Freeman translates it as "silent sufferer," it would seem to relate more to the verb *pappare*, "to gobble up or gulp down." Anyway, Mustafa gobbled and gulped, and his intended bride, the shipwrecked Italian beauty Isabella, escaped. In our own century, members of La Scala opera company who went off to sing in the Soviet Union had it put into their contract that they would be served pasta at least once a day. They had some precedent: Enrico Caruso, friends reported, believed with all his heart the words of an Italian food specialist that "artichokes sing when they're right, but when spaghetti is right it makes you sing."

Pasta is made today from precisely the same ingredients that it was millennia ago: hard wheat and water, period. Additives like eggs, spinach, tomato, to alter texture, taste or color, are mere decorations to the basic product. Most factories are "integrated"—they buy and mill their own wheat, move it into paste-making machines with the addition of water, and extrude it through pipes with variegated heads to achieve the forms they want. Then it is packaged, shipped, sold, all from sprawling plants. Almost all point out that they are environmentally friendly: no smokestacks, no chemicals, no mess.

At perhaps the world's most state-of-the-art pasta factory, in Excelsior Springs, Missouri, proprietor Richard Thompson (above) waves an arm at the green expanse that surrounds his $50 million American Italian Pasta Company and points out that "even our shipping boxes are biodegradable. No mess, no pollution." No "little old winemaker," he, either. A Midwestern-style overachiever, he wildcatted oil in the Dakotas in the '70s, did very well at it, but decided he didn't like the territory. "Oil prices were going crazy, and I decided to go for something steady. People always have to eat, so . . ." So instead of paying the North Dakota wheat farmers for drilling rights, he decided to pay them for their wheat and turn it into pasta. He spent six years studying the terrain, both here and in Italy, and interviewed Italian makers endlessly on how to improve the product. "It always came down to the best wheat, the purest water, the cleanest air," he says. So now he buys wheat directly from farmers, choosing different batches for a special type of protein called gluten that makes for cohesive dough and for the rich amber color that consumers favor. Thompson moves the grain by rail

When asked to write us a piece on pasta, the author cabled from her home in Italy: "Are you kidding? Mamma mia, *everyone who knows me says I'm no cook."*

At Spigadoro, near Perugia, spaghetti moves from extruder; it will be cut to hang down straight before entering dryer. The plant produces 130,000 kilos of pasta every 24 hours, sometimes runs seven days a week.

into his own storage and mixing silos, uses the springwater that made Excelsior Springs a spa a century ago, and thanks his stars for the clean, fresh air of his part of Missouri. He opened his plant in mid-1988, produces 50 million pounds of pasta a year and is currently increasing production 200 percent to keep up with the demand.

The American Italian company has several different trademarks, but the top of the line, in a handsome black-and-gold transparent package with a color picture of an Italian hill town (unidentified because he wants to run a contest to see who can identify it), is called Pasta LaBella and advertises itself as "Simply the world's finest pasta." All of Thompson's milling, mixing and extracting machines are Italian. The computerized control system and the workers are American. The milling system alone is a wonder of computerized efficiency: hand-selected, carefully mixed, the wheat goes up pneumatic tubes to the top of a six-story building and then gravity-feeds downward through a battery of cleaners, grinders, sifters, to extract the purest possible gritty, coarse particles, which are semolina. The best semolina should never include the softer portions of the wheat grain, which make flour, or the bran, which makes a lot of other things, including chicken feed. The milling system sends each load of durum through 150 different separations, says plant manager Tim Dodd proudly.

Then the semolina goes into mixers to receive water, and on to the extrusion process. Some of the resulting paste goes into slatted screens that extrude bright-yellow strings of spaghetti looped over moving rods, then into the dryers. The neat strings move sedately by, looking like nothing so much as delicious hula skirts undulating in a Hawaiian sun. Other machines create other shapes, forcing the paste through stainless-steel or bronze heads. A simple pin can make the pasta hollow, as in macaroni; a reduction or speedup of the flow creates the elbows, twists, bow ties and other fanciful forms, as rotating knives cut off the paste

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Belgians love pasta loops, held by Spigadoro's Ubaldo Passeri. At left and rear, dried spaghetti moves on.

Tagliatelle containing egg comes off machine at back. Twisted into nests, it is easy to cook, serve and eat.

flowing through. In Excelsior Springs these processes are invisible, closed inside the machinery. Each pasta "line," as producers call it, moves into automatic drying machines. Finally comes packaging. Drying is very important: first a quick, hot blast to seal the exterior, then slower heat and a cooling-off period. If pasta is dried too quickly, it fragments and fractures; if dried too slowly, it is prey to mold and insects.

At the Spigadoro Pasta Factory, near Perugia, Italy, a lot more is visible. Here in 1822 on the banks of the little Chiascio River, a certain Antonio Petrini erected a flour mill powered by river water. A century later a pasta plant was added. Here are grain elevators very like those in Excelsior Springs, the same guard at the gate, because pasta makers resemble Fort Knox in their reluctance to admit strangers. The processes and machines are virtually the same, but the austere functional offices of Excelsior Springs yield to the Italian sense of history and of *figura*, or "image." Inside the front door is a big, iron-bound, granite mill wheel marked simply "Petrini 1822." The floors of the entrance and reception area are marble. Upstairs are conference rooms with closed-circuit television, a screen for films and slides, bilingual videos for prospective buyers (the United States, Japan and Australia are the biggest foreign customers) and handsome color brochures for the curious. Richard Thompson worked with the Petrini family to set up his plant, and they, like he, prize the pure local water and the option to buy their wheat when and where they like. They get most of theirs from Apulia and Tuscany, but buy some from Canada to achieve the desired yellow tone.

Elbows for the soups of Belgium

At Spigadoro, however, one can actually see the extrusion process in line after line. The hula skirt of spaghetti comes dancing out and a machine neatly snips off the inverted-U form of the loop over the pole. "Italians don't seem to favor this shape, but Belgians love it," says a technician. "We ship these elbows to Belgium." On other lines pasta oozes smoothly out of the pipes, then twists and curls. Knives spin, and *plop, plop, plop*, the myriad forms drop onto conveyor belts and go into the dryers.

Things were not always so neat and clean, or so automated. For centuries pasta was made by hand, a laborious mixing and kneading, cutting and drying. Once upon a time, researchers say, barefoot men trod upon the mixture in barrels, just as in winemaking, and their hardworking wives rolled it out and cut it with sharp knives. According to folklore, the women worked at wooden tables at a carefully calculated height, and when twin spots of perspiration appeared on the backs of their skirts, the pasta was ready.

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The Italians are not above combining hot pasta with a cold sauce. This alluring Pasta Panzanella is freshly cooked spaghetti placed on a bed of arugula and basil, then doused with a sauce made of red onion, chopped garlic, tomato and olive oil.

Macaroni, spaghetti and all the rest were considered the diet of the poor for a long time in both Europe and America, but that wasn't true in the beginning. Neapolitans, who were among the first to develop pasta machines, about 1800, were known as "leaf eaters" for their regular diet of lettuce, cabbage and other green produce. *Maccaroni*, i.e., pasta, was to them a luxury and as such was taken up in the 18th and 19th centuries by English dandies who had both time and money to travel, and who affected the tastes and fashions of Italy. Some of them even formed a snooty Macaroni Club back in England, and that leads us to Yankee Doodle, who "stuck a feather in his cap and called it macaroni." Now "Yankee" was a derogatory term to the Brits at the time, and so was "Doodle." But *maccaroni* was an elite taste, probably used in the song to make fun of the pretentions of a poor Colonial boy. The Americans turned it around and claimed it in proud defiance, and the nuance was not lost on the educated Kennedy family, themselves descendants of poor immigrant boys. JFK and Jackie named their children's pony Macaroni.

Also in the 18th and 19th centuries, those on the grand tour took home with them both memories and prints of pasta pots on the streets of Naples, stoked by charcoal fires and presided over by vendors with huge wooden forks who lifted them, with blandishments, to passers-by. The accepted mode of consumption, tourists reported, was to hoist with bare hands an enormous portion, throw back the head, open the mouth and dump it all in. This is in fact a most efficient method for eating long strings like spaghetti or fettucine, and it may be seen in youthful variation on any summer Sunday alfresco in a village. A well-swathed infant in a high chair is presented with a plate of pasta and dives in with both hands, beaming with joy, undisturbed by flying drops of tomato sauce or oil and garlic. It crams until stuffed and then, to the delight of its elders, nods off to blissful sleep. Contented mothers confide to anyone who asks that "Giovanni [or Maria] cleans up pretty good when we get him [her] home."

Eating methods are in fact reputed to vary, like dialects, from one region to another. When southerners aren't dropping pasta straight down the gullet, northerners say, they tend to overload the fork. Genoese, on the other hand, are alleged to begin chewing on one end before they finish twirling on the other. But however they eat it, they certainly do not attempt to chop it into short lengths, as some neophytes do, and few deign to twirl it against a spoon. Backing it against the edge of the dish is OK, but best of all is to snag two or three or four strands in the tines of the fork, twirl delicately, put in the mouth and bite off any dangling ends, just as seamstresses bite off threads. One should lean forward, so the ends drop into the plate instead of into the lap. There may be a backlash, so good restaurants provide ample napkins (never paper) to be tucked into the collar, and one waiter with a can of talcum powder to remove stains from outlying areas.

Not all pasta has to be twirled, of course. There are many short forms that can be stabbed easily and transported to the mouth. There are said to be 500 different varieties in Italy. The American Italian Pasta Company makes more than 50 different sizes and shapes, Barilla in Italy advertises 99, and Spigadoro has at least that many. Sauces are as varied as shapes, which is fortuitous because many Italians eat some form of it twice a day,

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Antique pasta-making devices gird dish of *stracnar*, egg pasta in herringbone pattern with tomato, anchovy.

and even they would be bored out of their skulls if it were always the same. There are inevitable jokes about sauces: *pasta dei cornuti* ("of the cuckolds") means a quickie with cream and cheese, or oil and garlic, because a proper *ragù*, beloved of the Italian husband, takes three to five hours to prepare and wouldn't leave time for dalliance. A popular warming winter version, *carbonara*, with egg and bacon, is said to take its name from the *carbonari*, charcoal-makers who would take bacon with them into the woods in winter but could always buy eggs and pasta from a local farmer.

By whatever name or form, however, each type of pasta or sauce has its passionate devotees. One takes fish sauce better. Another, *ragù*. Almost any of it can take tomato, but that came rather late when it was imported from the New World, via Spain, in the 16th century. The tomato was unknown in Europe before then and was at first considered pure poison (SMITHSONIAN, August 1990). Italians called it a love apple, as did my paternal grandmother in the early years of this century, and she was wary of it. "Love apple"—*pomo d'amore*—is the origin of the Italian word *pomodoro*, or "tomato."

Just how pasta got to the United States is unclear. Most evidence, from recipes and letters and shipping documents, points to English "macaroni eaters" who brought it along and introduced the still-popular dish of baked macaroni and cheese. Thomas Jefferson, who introduced so much, is often credited with its importation, but the claim is flimsy. He did once take notes on the manufacturing process, on a visit to Naples, and he asked a friend to buy him "a maccarony machine." He even imported two cases of pasta in 1789, but it took nearly another century, and the influx of Italian immigrants, to spread the taste.

Some picturesque myths remain: that readiness to serve may be tested by throwing a strand against the kitchen wall (if it sticks, it's cooked); that oil should be added to the water to keep the stuff from sticking; that spaghetti is dandy with meatballs. All drive native Italians up the wall, upon which they would never, never hurl a piece of pasta. The meatball theory offends them most, perhaps because it was their very own kinfolk who invented it after they went off to America and found meat so relatively cheap that they popped it exuberantly onto their pasta. Nowadays in Italy they do use meat sauces and fish sauces, but meatballs, no.

And this brings us to the latest myth, that the best pasta is made at home. Once upon a time it was. The photographer friend I have already cited bought a pasta machine and an espresso coffee machine when he was transferred from Rome to Athens. He was convinced he could not survive without his pasta and his coffee. And my very young household helper in Rome, 35 years ago, often frustrated me by attaching long strips of spinach lasagna, green and gorgeous, to all sides of the bathtub, to dry. Hot, tired, dirty, I came home from work only to be defeated by the more urgent needs of the pasta.

No more. Very few housewives will go through the process, though many on occasion buy "fresh pasta," i.e., not dried. But the dried, packaged, commercial product is accepted as more reliable in quality, easier to deal with, handy to use. The current American passion for "homemade," Italians tend to dismiss as just another manifestation of that "do it yourself" psyche of their cousins across the sea.

There remains, however, one overwhelming truth that American enthusiasts have come to accept: for all its simplicity, the cooking of pasta is an art. It requires rigid attention. If you don't agitate it, it will stick together. If you let it sit, or cook it too long, it gets soggy. If you try to embellish it too much in the dish, it gets cold. It should always be *al dente*, "to the tooth"—you need to bite. The pasta products from the Excelsior Springs plant have specific cooking instructions on the back of each package, in both English and Italian. And at the august Spigadoro factory the conclusion of each video presentation ends with the stern admonition: "DON'T EVER leave the stove. Pasta must never be left alone."

With that, *buon appetito!* pasta lovers everywhere.

Bologna's Santo Stefano watches over enticing display of pasta and *pane* as hopeful pigeons bide their time.

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By John Madson

Bringing the 'bou back to its old stomping grounds

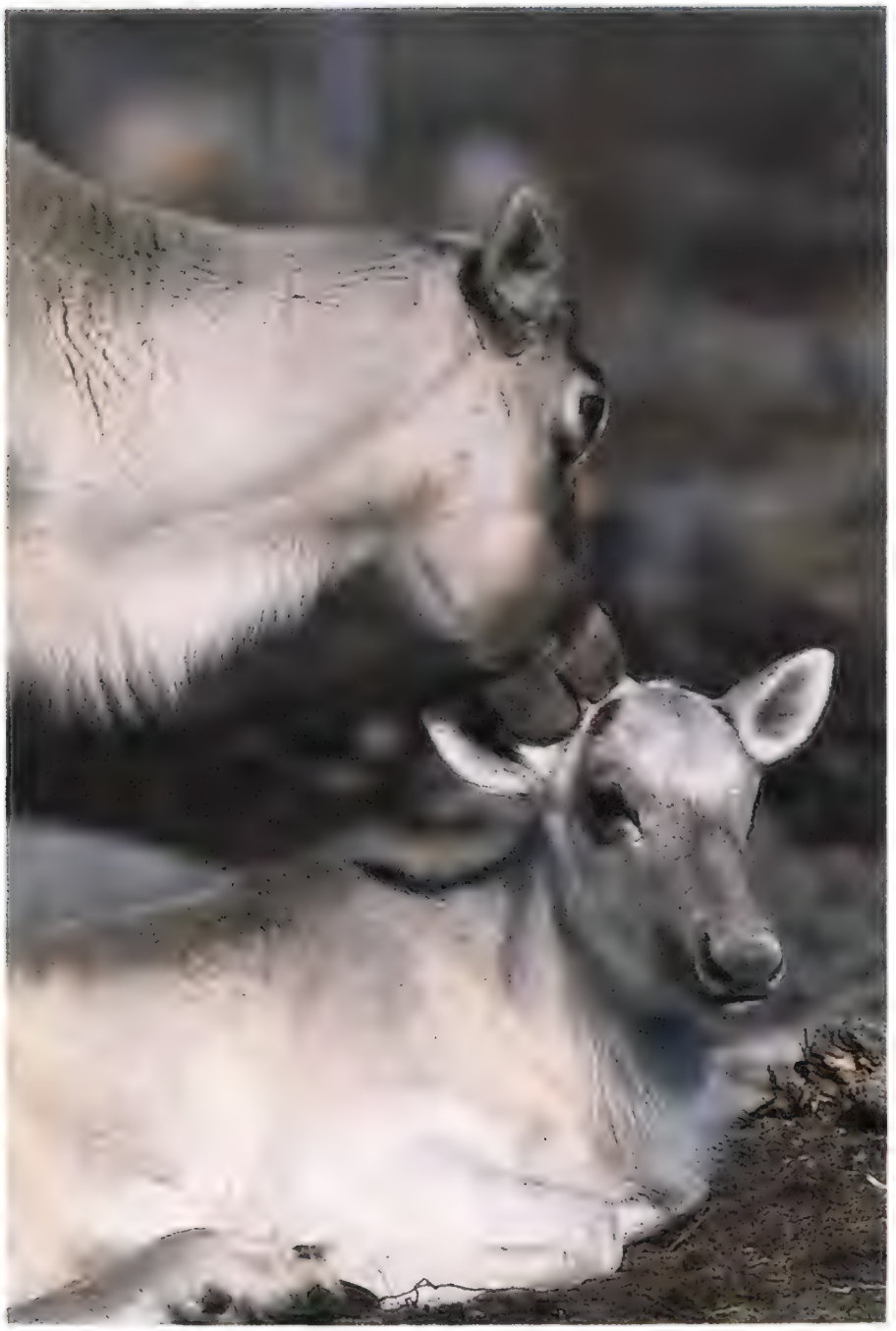
Efforts are now under way to restore caribou in the lower 48 states but, as scientists in Maine discovered recently, it won't be easy

A quartet of curious woodland caribou, all females, eye an intruder. Looking more relaxed, barren-ground bull (opposite) enjoys the fall sun. Wildlife experts hope transplants of woodland caribou will take root.

At first there was nothing but fog rolling up over the tundra out of the cold Atlantic. Then there were moving shapes within it, dim silhouettes that grew more distinct as they came closer—white calves beside their pale mothers, young bulls with adolescent antlers, and at last the great old sires with their wide and lofty racks. I had seen the summer herds of barren-ground caribou on the Arctic coasts of Alaska and Canada, but even the biggest of those creatures could never match these woodland caribou of Newfoundland's Avalon Peninsula. The bulls coming toward me might weigh 600 pounds or more in their autumn prime, making them possibly the largest caribou in the world. The herd passed slowly by, grazing on sedges and lichens, and then was gone, fading back into the mist.

The next time I saw the animals was on a brilliant morning with the ocean sparkling just beyond the tundra's headlands near the easternmost point in North America. On the skyline two miles away stood a dozen of the caribou; my binoculars found another dozen on lower ground. There were a lot of wild livestock that needed a closer look—if they'd allow it.

In 50 years of outdoor prowling, I've never seen a better day. It was a gift day, with a soft breeze out of the east, as clean as the vast expanse of open water over which it came. Most of the tundra I've known has been hellish stuff; the wet cotton grass of our Arctic is called *niakunak* by the Inupiat, meaning "hard to walk in." Not so, the Avalon Peninsula. You'll find some cotton grass swales there, with little bogs and hidden brooks, but much of it is a deep, rich carpet. In August it's set about with wild gardens of the native iris called blue flag, the little pink blooms of dragon's-mouth orchids, tall cinnamon flowers of pitcher plants and



A cow nuzzles her calf, part of the vital bonding that takes place during a youngster's critical first year.

Long dewclaws, the appendages behind caribou's hoof, provide additional support for animal on ice, snow.

ripening baked-apple berries on their solitary stems.

I went slowly, trying not to alarm the caribou by heading directly toward them, but wandering and pausing often. Each fold of ground revealed a few more animals, until there were hundreds about me. I found a soft cushion of sedge and shut down. Within an hour the herd had accepted me as an uninteresting piece of landscape. A cow and her calf came by within 50 feet, the cow diligently grazing while the calf frolicked about her, exploring for short distances and then hurrying back. The cow was not at her best. Her coat was a blotchy blend of summer and winter hair, almost piebald in coloring. She was very thin, sapped by calving and nursing, with every rib showing. I did not see a cow that was otherwise. She raised her head and looked at me once, then trotted past with the strange clicking that's a trademark of all caribou, a unique sound caused by the slipping of tendons over the anklebones. She was so near that I could see the great splayed hooves, broader than those of a moose but bearing an animal that weighed only one-fourth as much. Lady Bigfoot.

Several hundred yards away, on the crest of a high ridge, a stag party was going on. Lord Bigfoot and two of his squires lay there, basking in sun and sea breeze, chewing their cuds and contemplating the good life. Unlike the cows, they were sleek and heavy-barreled. They were in their full summer coats, but already the handsome white capes of their throats and chests were beginning to develop. In full autumn pelage, those manes might nearly sweep the ground.

The lesser bulls (called "stags" in Newfoundland) appeared to be 3-year-olds. Their antlers were impressive enough. But it was the third male that held all attention. He was possibly twice as old as the others, with sweeping antlers and palmate shovels. The two youngsters attended their chief, standing now and then, always facing him, while he studiedly ignored them. I have seen much the same thing among mule deer and bighorn sheep, and am told that it occurs among African elephants. A calf wandered up to the ridge crest and stopped near the big bull, staring. As a biologist, I was trained not to anthropomorphize, but I know hero worship when I see it.

A week's drive for a firsthand look

I hadn't ended up in that fine corner of the continent by accident. Driving there from my home in southern Illinois took a week, but I wanted a firsthand look at the caribou herd from which 27 animals had been selected for a highly unusual project. Those creatures had been shipped down to Maine, where an innovative caribou restoration program was under way. The objective: to return the species to an area

Prime bull strikes a postcard pose amid grasses and sedges of the northland. Tatters of velvet, the soft covering that nourishes developing horns, hang from antlers that are still tinged with the animal's blood. Caribou remove the velvet by thrashing their racks in the brush, rubbing them on trees.

where it had been extinct for more than eight decades.

Maine, as it happens, isn't the only state that wants to see a viable caribou population back in the wild. Minnesota and Idaho are making serious moves in that direction, too. It's not easy to engineer a comeback in the wild; many things can go wrong. But if one or two of these efforts meet with some measure of success, it may not be long before a creature that has all but disappeared from the nation's northern rim is once again a familiar and thrilling sight there.

Wherever they are, whether they're called barren-ground caribou, woodland caribou or reindeer, they're the same animal: *Rangifer tarandus*. They are circumpolar; if you're standing at the North Pole, there are caribou in almost every direction—Scandinavia, Siberia, Alaska, Canada and Greenland. But their roots are thought to be in North America.

Most of our horned and antlered animals are immigrants, having come to this continent across the Bering land bridge during the Pleistocene. The only exceptions are the pronghorn, a bona fide American original, and probably the caribou. There's evidence that the caribou originated here and crossed over into Asia to become the Old World's reindeer. The oldest European reindeer is a German fossil dating back about a half-million years. Yet scientists have found fossil remains in Alaska dating back twice that far.

The barren-ground caribou of the Far North are about one-third smaller than their woodland kin. Still, that's a good-sized animal, bigger than a large mule deer and smaller than an elk. A caribou's muzzle is hairy, broad and cowlike. The hooves are cleft, like any deer's, but leave a print as round as a cow's. Strange things, those hooves. In summer, the center part is a spongy pad. In winter, the pad shrinks and is covered with short hair that apparently serves as insulation, while the outer edge becomes hard and gives good traction on ice. Those outsize hooves are a great help in swimming—and caribou are marvelous swimmers. They have been seen cruising through 20-foot seas to reach an island a mile off Newfoundland.

No deer has been more useful to people than our North American caribou and the Old World reindeer. Until recent times, the nomadic Lapps of Scandinavia depended almost entirely on reindeer, using them for skins, meat, milk, cash income, and even training them to harness. Northern Indians and Eskimos found caribou skin ideal for clothing. Early autumn skins were prized for winter parkas—an inner parka worn with the hair inside, an outer parka with hair out. Under it all, native hunters wore caribou-skin loincloths. Caribou-skin socks had the hair inside; knee-length boots were

John Madson traveled from Newfoundland to Idaho and several points in between to report this story. He profiled the wild turkey in the May 1990 issue.

made from caribou leg hide and worn with the hair side out. Caribou meat is tender and succulent, and as flavorful when freshly butchered as other meats are only after aging. Writing in the 1920s, naturalist Ernest Thompson Seton noted that even lichen "becomes good food for man after it has been chewed, swallowed and partly digested by the Caribou."

On most of its ranges, *Rangifer* is doing well these days. At last count, there were nearly 200 herds of wild caribou in the world, including 102 in North America, 55 in Europe, 24 in Asia, and 3 introduced herds on South Georgia Island in the southern Atlantic. This establishes the caribou as one of the world's most widely distributed large land mammals. All told, there are about four million of these animals, three-fourths of which occur in just nine herds—eight in North America and one in the Soviet Union. The most pronounced recent change has occurred in Alaska and Canada, where the population estimates for five herds increased by about a million animals between 1979 and 1985. (Part of this is due to real population growth; part to improved census techniques.) By the mid-1980s, most North American, European and Asian herds were either stable or growing, and in 1985 Canadian authority A. T. Bergerud expressed his belief that "the great days of the caribou on the barren lands are here at last."

On the *barren* lands, that is. It is otherwise at the southern limits of the species' range, in woodland caribou country. Idaho biologist Brad Compton recently told me: "There is probably no large mammal more critically positioned in the lower 48 states today."

Within historic times, woodland caribou still ranged down into New England, but settlement and economic progress put a stop to that. The creatures survived longest in the fastnesses of northern Maine, but by 1908 they were gone even from there.

Kicking up puffs of snow, caribou churn across an expanse of Alaskan tundra that resembles a moonscape.

Caribou lack much of the ingrained wariness of other members of the deer family, which Seton attributed to curiosity. "Many times," he wrote, "I have humped myself up on an open mound when I knew Caribou were approaching, and have had them come closer and closer . . . on one occasion so near that I slapped the Caribou on the nose." This "weakness," as Seton put it, made the animals easy meat for the early market hunters and settlers. It was more than just overhunting, though. Many caribou were surely killed by a pernicious little beastie with a big name. *Parelaphostrongylus tenuis* is a meningeal worm that lives in terrestrial snails in its larval form and, as an adult, in the heads of white-tailed deer. The adult worm produces larvae, which are shed in deer feces to start the cycle all over again. The white-tailed deer seems able to live with this parasite, but in all other members of the deer family—the mule deer, black-tailed deer, elk, moose and caribou—it may burrow into the brain, causing neurological disease and, eventually, death.

In the old days, upstate Maine consisted mainly of deep forest, lakes, muskeg bogs and ponds, and the

Like the African wildebeest, these creatures migrate several hundred miles between their seasonal ranges.

tundra of high tablelands: moose country, and to some extent caribou country, but not country favored by white-tailed deer, which prefer forest edges and the kind of "brush in the sun," or new growth, that follows logging. When the Bangor Tigers and other famed lumberjacks let daylight into the swamps in the 1830s, they created whitetail range. The deer moved in, and the caribou vanished under the twin onslaught of bullets and brainworm.

Maine's moose also faded over the years, probably for the same reasons. During the 1970s and '80s, however, they began making a strong recovery. Had they developed a tolerance for brainworm? Whatever it was, biologists began wondering if the same thing might also apply to woodland caribou, and in the spring of 1986 the privately funded and operated Maine Caribou Reintroduction Project was born.

Restoration had been tried before, and failed. More than 20 animals were released in Baxter State Park, a vast preserve in the northern part of the state, in December 1963. They began dispersing the following spring and never regrouped. All were gone within three years—the apparent victims of brainworm, illegal shooting and failure to remain together, which is essential for breeding and protection from predators. This time, hardy woodland caribou from Newfoundland would be held as a nursery herd in enclosures at the University of Maine near Orono. As the herd grew, the surplus would be trucked to Baxter and released. It was hoped that caribou reared in captivity would be more sedentary than transplants trapped in the wild, and less likely to disperse. Then too, Avalon Peninsula caribou were chosen for the project because—unlike most members of the species—they do not have a strong migratory tradition, moving only 20 to 30 miles between winter and summer ranges.

The nursery-herd approach had worked elsewhere. Just a few hundred miles away, it had restored woodland caribou in Quebec's Laurentides Provincial Reserve. I remember seeing them in big enclosures and watching wagonloads of foliose lichens being brought in to feed them—caribou being the only member of the deer tribe able to thrive on lichens alone.

Mark McCollough, a wildlife biologist, was selected

Peary caribou on Ellesmere Island are half normal size due to harsh environment.

Reindeer ruminate in Alaska, where Eskimos have several domesticated herds.

to head the Maine effort; Bruce Connery, a biologist brought down from Alaska, assisted him. Two Newfoundland caribou experts surveyed the proposed release area at Baxter and saw no reason why the nursery-herd approach wouldn't work there. No one, however, had taken a census of deer in the Orono area, where the nursery herd would be quartered—an oversight that would have dire consequences.

From the start, there was enormous public interest. During the three years the caribou were in their Orono pens, up to 85,000 people saw them. Such interest was the lifeblood of the project, which depended entirely on grants and donations. Caribou posters were sold, a caribou alphabet book for children was published, a caribou videotape was produced and an Adopt-A-Caribou program was cranked up. A fourth-grader in Gorham wrote a report on caribou, and his classmates helped raise $2,500. Schools elsewhere in the state raised about $10,000, and youngsters in many other parts of the country also sent contributions.

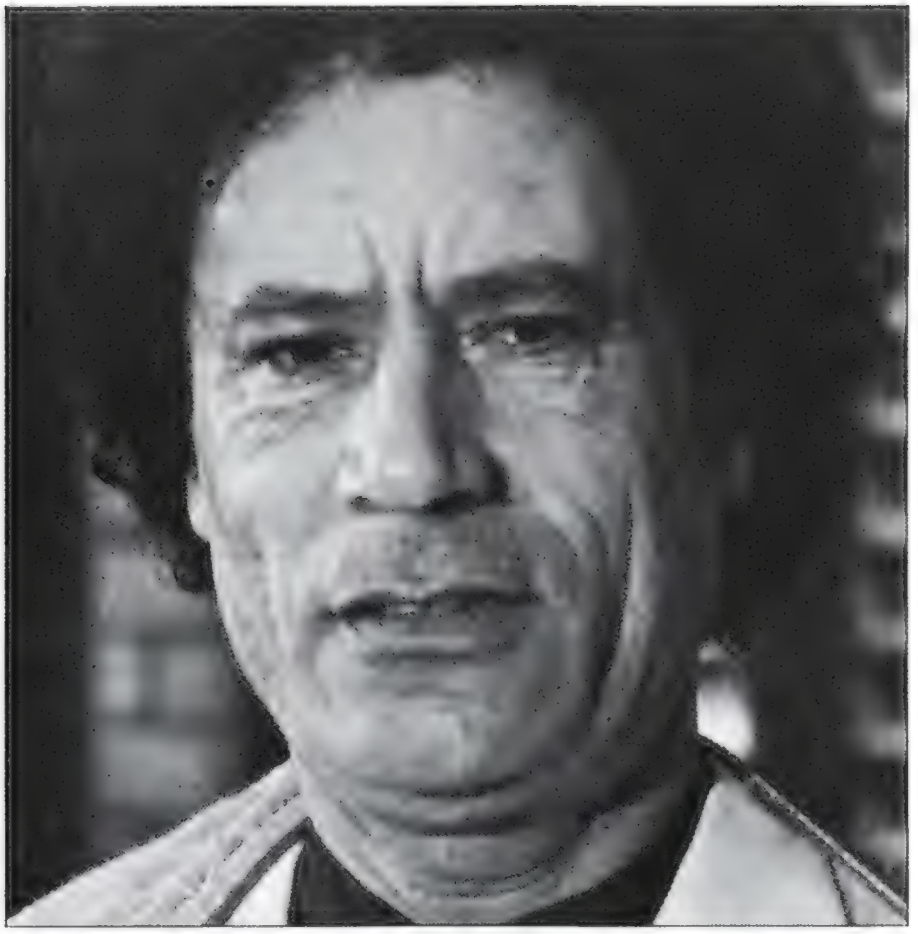
Since the Orono area had not been surveyed before the nursery herd was established, the local deer density was unknown. There were, it turned out, as many as 52 whitetails per square mile, and most were afflicted with brainworm transmitted through snails. Evidently, McCollough says, some of the caribou ingested snails and acquired brainworm during the time they were held in captivity. But he and Connery did not know that. There were no signs of the disease.

In April 1989, a dozen yearling and 2-year-old caribou raised at Orono were trucked to a pen in Baxter, held there for a month and released. The critical stage of the project had begun. More problems. The holding period was supposed to result in greater herd cohesion after release, but within several weeks most of the caribou were scattered. Six months later, ten of them were dead. As many as five were killed by black bears. This tended to confirm the fear that animals raised in a nursery herd might be less able to evade predation than those born in wilderness. Four of the caribou had previously contracted brainworm, including two that were killed by coyotes.

In the spring of 1990, another 20 animals from the nursery herd were released. Seven lost the radio collars that enabled the restoration staff to monitor their movements. The others died within seven months, again the victims of predators and brainworm.

The nursery-herd approach may have worked in Quebec, Alaska, Finland and Newfoundland (where there are no white-tailed deer), but it bombed in Maine. Eventually McCollough and his colleagues proposed to abandon it in favor of direct releases. This approach would involve "mint condition" caribou taken directly from Newfoundland and released in Baxter after a short holding period. Free of brainworm and still wary of predators, those truly wild animals would be well equipped for survival. But the program never got off the ground. Late last year, the project's board members decided that direct releases would be too expensive and that, sad to say, was the end of the state's second caribou-restoration attempt.

Nearly 1,200 miles away, some people in Minnesota still have caribou on their minds. The northern half of that state was once woodland caribou range. The ani-



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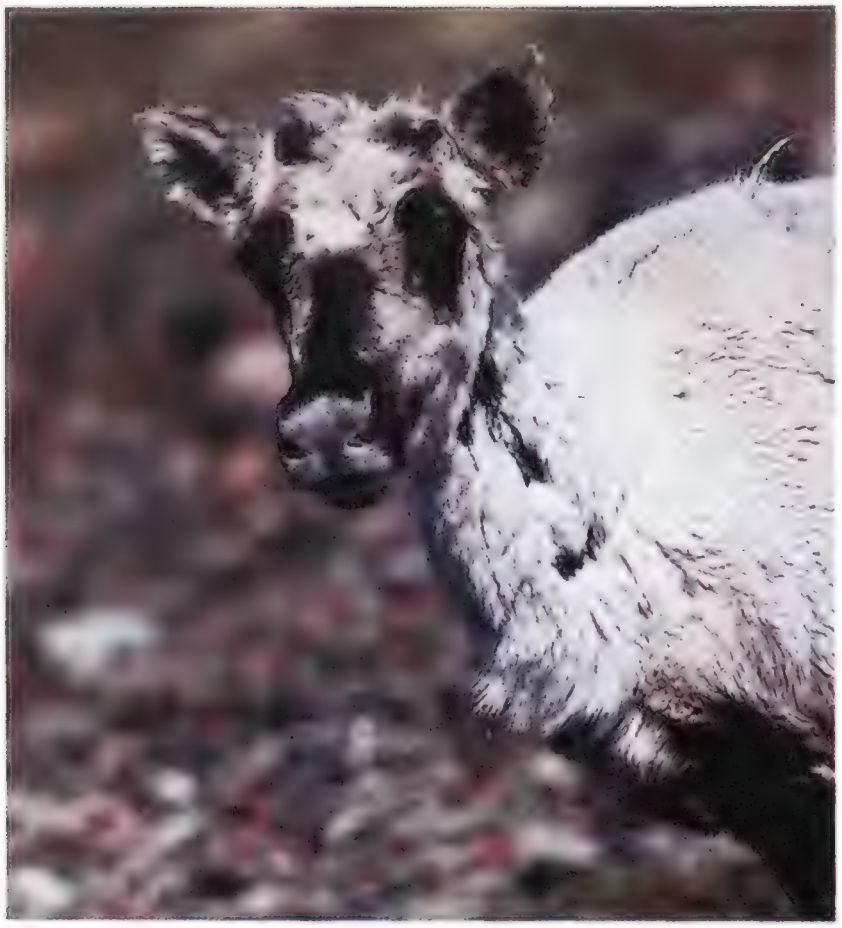

Female looks scruffy while shedding winter pelage, but dark patches reveal sleek summer coat underneath.

mals were in the Superior National Forest until 1925, and further west until 1942. Plenty of good caribou habitat remains there today, particularly in the Boundary Waters Canoe Area Wilderness (SMITHSONIAN, July 1988), and the Duluth Safari Club wants to see a restoration effort take place. Although many of its members are hunters, the group maintains that it wants caribou restored not for hunting but just for the sake of bringing back the 'bou to its old home grounds. And so the North Central Caribou Corporation has been formed with the blessings and counsel (but no official cash, as yet) of several state and federal agencies.

If everything works out, caribou may be brought into the northeastern part of the state next spring. They will come from Canada's Slate Islands in Lake Superior, where a herd of the animals goes through periodic cycles of overpopulation and starvation. The method of introduction has not been decided, but it will probably be a direct release.

One of the unknown factors in Minnesota is the timber wolf. Experts believe the density of wolves in the proposed release area is about one for every 15 or 20 square miles. One Canadian caribou authority predicts that introductions into northern Minnesota will fail, even in the absence of deer and brainworm, if the density exceeds one wolf for every 39 square miles. The Boundary Waters site also has a moderate density of black bears, a nemesis in the Maine project. Studies are now being conducted to determine if the caribou would survive the bears.

Another 1,200 miles to the west, Idaho has a caribou-restoration project of its own under way. A tiny native herd still wanders between Idaho and British Columbia's Selkirk Mountains, sometimes touching into northeastern Washington. It's high, wide and handsome country, strong on vertical and mighty shy on horizontal, with such compelling wild creatures as grizzlies, elk, cougars, and a wolf now and then.

In 1984, when the Selkirk caribou were listed as an endangered population, there were only 28 animals left. A recovery plan was approved in 1985, and the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the Idaho Department of Fish and Game joined forces to put the herd on more secure footing. Woodland caribou were taken from a larger herd farther north in British Columbia and released in Idaho. Two dozen were trapped and released in 1987, another two dozen in 1988 and a final dozen last year.

One of the most active caribou partisans in the area is Paul Rawlings of Bonners Ferry, a community long dependent on the timber industry. Rawlings is lean, bearded and intense, and when I met him at his home he was barefoot, wearing running shorts and a T-shirt announcing that Idaho is not for sale. He's an outspoken advocate of wilderness and wilderness critters such as caribou and grizzlies. It is not the most popular position in town. He has made no secret of his beliefs and says he has been the target of vandalism and threats. "At the heart of the problem is the uncertainty that exists on the part of the Forest Service," he told me. "Loggers resent the official reluctance to let timber contracts in areas that may be classed as wilderness in the near future—but which are de facto wilderness areas now."

Caribou, yes—wilderness, no

People in Bonners Ferry who are wary of the restoration project have nothing against caribou, but they do have a problem with the creation of new wilderness areas that might restrict logging and therefore their livelihood. Peter Wilson, the city attorney and chairman of the local chamber of commerce's Environmental Balance Committee, does not believe caribou and logging are mutually exclusive. "Caribou get along just fine with a lumbering operation," he told me. "They'll hang around such an operation eating lichens from the felled trees and licking grease off the fittings of logging machinery."

Brad Compton is the Idaho biologist on the project. When I visited him in his Bonners Ferry office, it was cluttered with hard-used field radios, map cases and other equipment. I asked him about caribou fatalities.

"We've lost some," he conceded. Of the 26 caribou known dead, 6 were killed by predators, 1 by poaching, 7 by natural causes and the rest by unknown causes.

So how are the survivors doing? "As far as we know, they're doing well," Brad said. "We'll know more after the winter survey. Our best guess is that there are between 50 and 60 animals in the United States and Canada combined." He paused, reflecting. "We have twice as many animals around here now as when we started in 1987, so we must be doing something right."

Eventually maybe Bigfoot will come home to Maine and Minnesota and Idaho in spite of brainworm, bears, mountain lions, wolves, poachers and certain kinds of political opposition. And then again maybe not. Like most wild animals, the caribou has a hard time adjusting to the problems we foist upon it. When we destroy its habitat or subject it to harassments of one kind and another, don't we have an obligation somehow to mitigate the damage?

Back in the mid-1970s, conservationists were up in arms over the proposed Alaska oil pipeline because, among other things, it threatened to interfere with traditional caribou migration routes. Alerted to that problem, the pipeline's designers went back to the drawing board and came up with a scheme to go underground at certain crucial points, thus enabling the caribou to move back and forth.

Now the focus of alarm has shifted to the coastal plain of the Arctic National Wildlife Refuge, traditional calving grounds of the famed Porcupine caribou herd. Various schemes are afoot to open this fragile wilderness on the North Slope of Alaska's Brooks Range to petroleum development, and once again the caribou is on the spot. Hopefully we can learn from recent history and avoid the mistakes of the past. It would be ironic if woodland caribou were restored in the lower 48 states while their barren-ground cousins to the north lost precious ground.

Bulls spar as the fall rut approaches. Males become so preoccupied with courting that they seldom bother to eat, losing up to one-fourth of their body weight. Dominant bulls usually mate with several females.

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From the days of the Egyptians, right up to today, the ancient practice of barbering has had a ritualized mystique all its own

I am thinking about the big barbershop in the basement of the Hotel Utica, where my father took me for my first haircuts. It was a world: the cracked leather of the big square seat, the wonderful hand pump at the side with which I was jacked up higher and higher, the ornate steel footrest with the mystic word "Koken" written on it, the soft slap of the strop and the murmur of man talk from the eight or nine chairs all around the room, the smell of lilac and cigars and witch hazel and the 3-in-1 oil on the warm, steel hand clippers that clicked at the back of my neck.

And the strange things I saw there: a man, a paunchy, graying businessman with a chain across his vest, having his nails polished. Polished! While he lay back all but supine in his chair, a steaming towel swirled about on top of his face leaving only the nose showing. The barber put the towel on with tongs. Didn't it hurt? At the other end of the man his shoes were being polished. He had become an object.

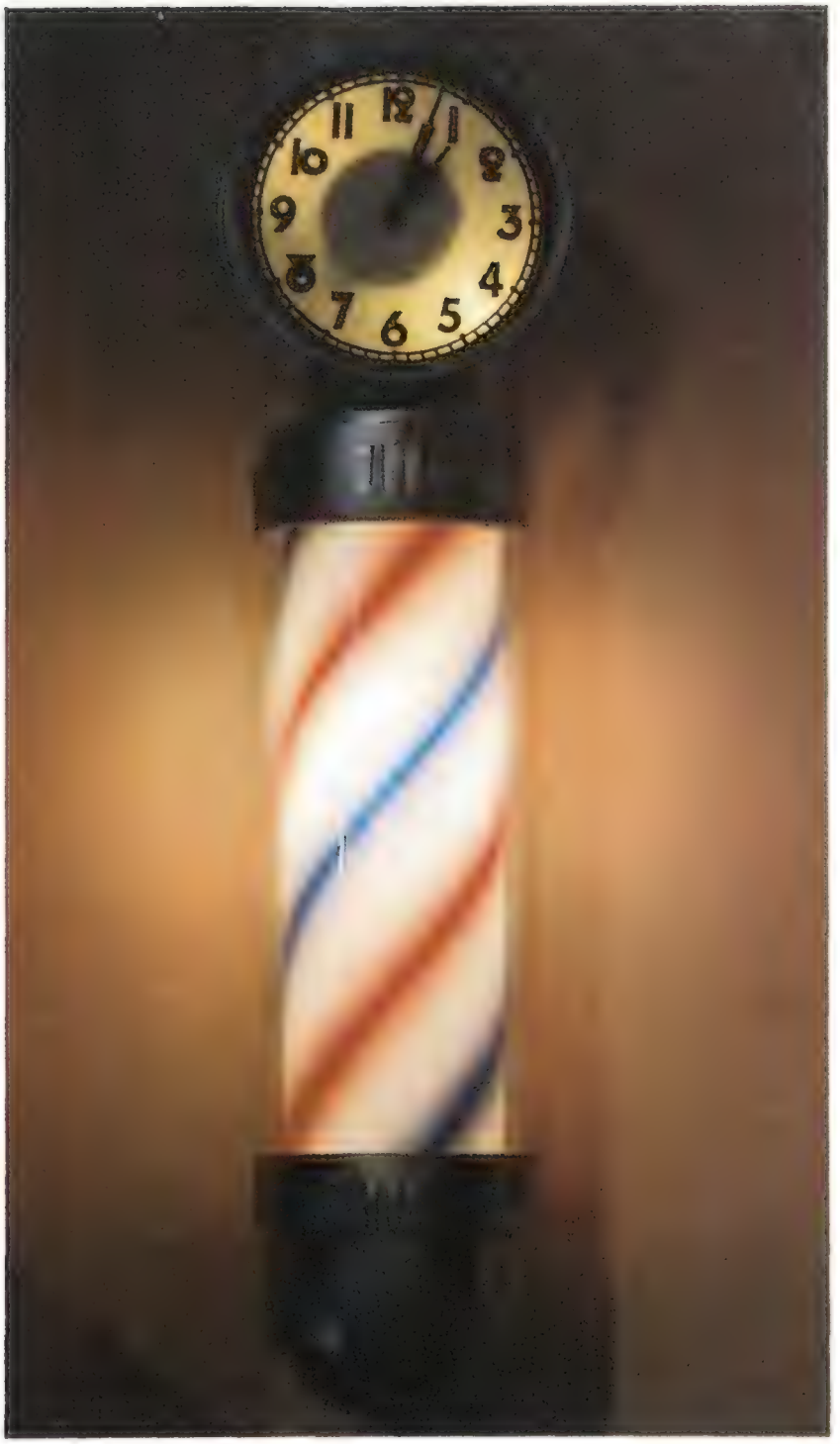
In my memory the barbershop is the last outpost of unabashed male vanity, where a man could give himself up to those quietly sybaritic mysteries. Most mysterious of all was the glass cabinet marked with a red cross and the word "Sterilizer," from which my barber took his several pairs of scissors. I wondered how it worked. You just put the things in there and they would be sterilized?

Another thing for a small boy to ponder as his tissue-paper collar was tucked around his neck: Why the straight razor? And the elaborate foamy soap, whipped up in a mug? My father used a safety razor at home, and even here electric razors dangled from hooks everywhere. I decided finally that it all had something to do with reverence for the past.

Photographer Jonathan Selig feels that reverence. As he traveled the country during the past year, he dropped in on every old-time barbershop he could find, and on Edwin Jeffers' Barber Museum and Barbering Hall of Fame in Canal Winchester, Ohio, where he took many of the pictures on these pages.

Back in the days when barbershops looked like barbershops, we used to watch for the Burma Shave signs along the highway, four of them in succession containing a quatrain, followed by the fifth with the advertisement. The only one I remember for sure is this: "In the Days / Of the Caesars / They Pulled Whiskers / Out with Tweezers. . . . BURMA SHAVE."

Well, it's not strictly true. The Romans had razors. So did the Greeks, the Egyptians and the ancient Chi-



Rare barber pole with clock is probably from the 1890s. Original red-and-white cylinder had to be replaced.

Plush Koken barber's chair and oak backbar bedecked with tools of the trade evoke barbershop of the 1880s.

Photographs by Jonathan Selig

Turn-of-the-century shop at Edwin Jeffers' Barber Museum in Canal Winchester, Ohio, is licensed to cut, shave and singe hair. The chairs sport side seats that were designed to give barbers a chance to rest their feet.

nese. Razors have even been found in late Stone Age dumps. Barbers doubled as surgeons and dentists in the old days, hence the bloodstained bandage wrapped around a pole that became the barber's totem. They also gave enemas and practiced bloodletting. In fact it took centuries for bona fide surgeons to disentangle themselves from so-called barber-surgeons.

It was not until after the Civil War that what we know as the barbershop appeared in America, bringing with it the cult of the male hideout, complete with its pile of racy magazines, its hangers-on and their desultory gossip (remember Ring Lardner's mordant story *Haircut?*), its barbershop quartet—all of them immortalized, I guess, by Norman Rockwell.

My first city editor, up in Watertown, New York, used to go across the street to a barber named Speedy H. DeCastro for a six-minute haircut. Not bad, either. Today, you have to search deep in the courthouse or an old downtown office building to find your true 40-minute barber, with his superbly sharp hand scissors

Backbar and cabinets hold an array of tonic bottles, sterilizers, mugs, brushes, and an early latherizer.

Shaving mugs from 1880s (at top, bottom) bear name and trade of owner. Mug at center is English, early 1900s.

whick-whicking around your ears, and his polite inquiry if you want your nostrils clipped, and his signature dusting with the powdered face brush. The rest of them call themselves hairstylists and charge five times as much.

Perhaps they are right to, I don't know. There are a lot of new things for a barber to learn these days, along with keeping up on the old. There's the skater's cut, for instance, and the hightop Philly, with or without tracks—those decorative shaved lines. And there's always the taper, flattop, whitewall, ducktail, "Harvard cut" and the others. It's a tough profession.

On the other hand, I have observed that no matter what I ask for, long in the back and short on top, short on the sides, trim it all over . . . whatever I request, I find that each barber gives his or her own universal haircut, and that is what I get.

"And that," as Speedy DeCastro would say, "is what you deserve."

Michael Kernan

Barbershop at the Columbia State Historic Park in California dates back to 1867. The rear of shop led to a more private bathing area, popular during the gold rush days.

The Barber Museum in Ohio boasts a collection of some 600 razors. Straight razors (above) often had ornate handles and blades. Most were made in Germany or England.

Collection also includes a seven-blade Wilkinson Sword safety razor (left) and 1933 Tark electric (far right).

Display of barbering paraphernalia features an 1876 neck duster, a Swaty hone and an 1890s hand strop.

Barber Bill Scroggin consults with a customer at La Arcada Barber Shop in Santa Barbara, California. He has cut hair for 56 years, for fees from 50 cents to $8.

Bill's clientele has also changed during that time. Here, he gives one of his younger customers, a solemn Allison Doxsee, not quite 11 months old, her very first haircut.

Safety should be our first priority. The auto industry has dragged its feet long enough.

We aren't crusaders. We're car builders. But we've discovered something wonderful. Drivers' air bags save lives. The letters we get from people whose lives have been saved by a Chrysler air bag are enough to make a grown man cry.

So one million air bags later, we know we're on the right track.

We want to provide a level of safety that is not always available today in the average car and truck. We know that a vehicle engineered for safety will add value the customer should not be asked to live without.

But we have a head start.

Chrysler is the only car company with a driver's side air bag standard on every car we build in the U.S.* Honda says they will have them in all their cars in 1994. Toyota and Nissan say 1993. GM announced they will have drivers' air bags in all their cars in 1995.

Meanwhile, everybody puts them on the most expensive cars. But not the lowest priced.

And we wonder why. There's no such thing as a poor man's air bag.

Chrysler has more models of cars and trucks combined with standard anti-lock brakes than Honda, Toyota and Nissan together. The anti-lock brake system is one of the best things ever to go into a car.

And by the way, Chrysler offers more models with 4-wheel drive than Honda, Toyota and Nissan combined.

Every car company has its priorities. None is more important to us than safety.

How about an air bag for a minivan?

For 1991 Dodge Caravan and Plymouth Voyager have a lower, more aero front end. An instrument panel redesigned for easier readability. Rear shoulder harnesses for passengers in the out-board seats. Available all-wheel drive for better traction and anti-lock brakes for surer stops.

But we get letters asking, "Where is our air bag?"

*Excludes vehicles built for Chrysler: imports, Laser, Talon, Premier, Monaco, Summit. †Depending on model. **Protects engine, powertrain and against outer body rust-through. See 7/70 limited warranty and its restrictions at dealers. †† J.D. Power and Associates, 1987-1990 Customer Satisfaction with Product Quality and Dealer Service. sm 1986-1989 passenger cars.

So this January we introduced the first available minivan air bag. The minivan driver's air bag must be used with the seat belt to be fully effective. The two together will provide the level of safety we're talking about.

Is any safety feature insignificant?

Consider the safety options we make available† A visor phone you can talk into without taking your hands off the wheel. A remote keyless entry system when it's dark and scary. An electrochromatic rear-view mirror that dims automatically to reduce glare. Speed-sensitive locks that lock themselves. Heated outside power mirrors to get rid of freezeover. Wiper air foils to keep your windshield clear, even in a downpour. And how about bumpers that exceed government regulations.

We want you to know how important our safety features are. Before you have to use them.

Is a quality car a safe car?

In the early eighties, the American car industry made a mockery of "made in America." And we paid the price. A big price.

But this is 1991. And 120 billion dollars later, our industry has forged the biggest turnaround in the history of industrial America. The technology, the factories, the cars and trucks, the training have all been jump-started practically from scratch.

The result: one American brand is now ahead of Honda in the same survey that has enthroned Honda quality. The rest are close behind.
The distance we have traveled is impressive.
The distance we have to go is miniscule. And we will go the distance.

But is a quality car automatically a safe car? Not unless there is a commitment to the engineering features that will provide the level of safety all carmakers should strive to achieve. We believe a car engineered for safety is a car engineered for quality.

And for the ultimate benefit of the consumer.

Do we have to sacrifice customer care?

For the last 10 years, Chrysler has provided the customer with the longest powertrain warranties in the business.** We still do.

For the last four years, a J.D. Power and Associates survey has shown Chrysler attained the highest customer satisfaction ranking of any American car manufacturer,†† based on the quality of our products as well as the quality of our dealer service.

We will not sacrifice our products. Our dealers will not sacrifice service. We can't afford to.

Safety: a commitment for the 90's and beyond.

Whether stated publicly or implied, every car company has made a commitment to quality. Or satisfaction. Or both. And we're all doing everything we can to make good on that promise. If we didn't, the customer would put us out of business in a hurry.

But the Chrysler commitment goes beyond quality or service, the price of admission to the market. It goes directly to a growing concern in America: safety on the road.

We share that concern. And we show it. In the way we engineer safety, feature after feature, into the cars and trucks we build.

It's our hope that the rest of the industry will do the same. And do it soon.

Lee Iacocca

Advantage: Chrysler.

CHRYSLER · PLYMOUTH · DODGE · DODGE TRUCKS · JEEP® · EAGLE

By Shepard Barbash

These magicians carve dreams with their machetes

Peasants in Mexico's Oaxaca Valley have turned woodcarving skills into profits that promise a better future for themselves and their families

Manuel Jiménez is every bit the difficult artist. He is by his own account one of the greatest geniuses the world has ever seen. A master woodcarver, he commands prices four times that of his most expensive competitors. A reformed alcoholic, he lives behind a wall topped with shards of glass that overwhelms the adobe huts and open dirt patios of his neighbors. He is a self-proclaimed faith healer and prophet, and is convinced the world will end with the end of the century.

"No one endured what I endured," Jiménez often says. "I suffered, but I robbed my destiny." Deprived of an education, he taught himself how to read. Deprived of land by his father, who beat him as a boy, he became the largest landowner in his village. Addicted for years to alcohol, two of his brothers already dead from drink, he stopped drinking entirely.

"Mine is a sacred history," he says. "I am not just anybody, I am a real tiger. I was born intelligent. Everyone here is living off my initiative. If I hadn't started carving, no one would be doing anything. I invented a whole tradition. They should make a statue of me in the plaza with an arrow pointing to the house—and rename this street 'Jiménez Street.' For Jiménez will never die. I am like the sun in the sky. Oaxaca without Jiménez would not be Oaxaca."

During a power failure in their village, Coindo Melchor's family paints his carvings by candlelight.

Photographs by Vicki Ragan

Master carver Manuel Jiménez works on a figure in his Arrazola studio; his style changed between 1959 mermaid and 1990 frog.

To a point he is right. Jiménez has pioneered a renaissance of folk-art carving in the Oaxaca Valley in southern Mexico. Even he is surprised when he is told there are now 200 families of carvers (including five Jiménez grandsons) and dozens of stores in Oaxaca that carry their work. The boom has converted poor villages of subsistence farmers and itinerant laborers into prosperous communities of artisans. It has brought isolated peasants into daily contact with tourists, merchants and gallery owners from around the world. Above all, in the space of just a few years, Oaxaca woodcarving has become legitimized as an art form—worthy of critical attention and exhibition.

"What you have in the carvings is an exuberance of form and color and detail that is simply irrepressible," says María Teresa Pomar, former director of the Museo Nacional de Artes e Industrias Populares in Mexico City and an authority on Mexican folk art.

Handmade with the crudest of tools, the carvings are at once bewitching and guileless. "You sense the person behind the object," says Marsha Bol, former curator of Latin American folk art for the Museum of International Folk Art in Santa Fe. "I don't want to use the words 'charming' and 'delightful' because that's what people always say about folk art and it misses what's going on; the work is very much based in the religious and everyday life of the people who make it. It's mysterious. At the same time, it's just so friendly and approachable."

The carvers' range of expression is enormous, their subject matter limitless, their technique often masterful. They carve cactus and kings, mermaids and devils, virgins and oxcarts, musicians and churches, Christ figures and skeletons. They make every animal known to Man and then some. They capture the immediate world of village life and the universal world of dreams. Naked, bird-headed women mingle with monsters, psychedelic cats and San Isidro, patron saint of the peasantry. Fierce purple lions tower over dancing chickens. Many insist the carvers must eat hallucinogenic mushrooms. They don't—they just have active internal lives and fearless palettes.

Stretching out from the capital, the Oaxaca Valley nurtures an encyclopedic diversity of crafts, some of whose origins date back more than a thousand years. There is black pottery, serape weaving, basket weaving, tin, jewelry and puppet making. For the Night of the Radishes, in December, Oaxacans carve elaborate scenes out of radishes. For funerals, they paint with sand. Few places offer a richer, more complicated variety of cultures. Vast and mountainous, the state of Oaxaca is home to 16 linguistically distinct Indian tribes, who continue to survive within the country's dominant culture of Spanish-speaking mestizos.

History lives everywhere. The great Zapotec ruins of Monte Albán (SMITHSONIAN, February 1980) not only survive above the capital city, but grow, as pyramids

Author Barbash and his wife, photographer Ragan, lived in Mexico for four years; they are now working on a book about the woodcarvers of Oaxaca.

are continually being unearthed and excavated. Archaeological surveys piece together ancient settlements throughout the state. One carver dug up a pre-Hispanic funerary urn in his backyard and now uses the hole as a barbecue pit. Pelota mixteca, a ball game ten times older than baseball, ranks behind only soccer and basketball in popularity among team sports. Hundreds of active Catholic churches—many of them more than 300 years old—stand as reminders that the Spaniards came, conquered and, even after Mexico's independence, stayed on.

Most of the artisans now carving began within the past 12 years. Lacking the constraints of a long artistic tradition, they have been free to mine the region's creative heritage—its jumbled culture of Indian and Spanish, religious and commercial, foreign and local. Motifs seem to change monthly, driven by competition.

As with most folk art, quality varies as widely as the subject matter, from carver to carver, and within the cumulative work of an individual. The magic is often serendipitous. Artisans—they almost never refer to themselves as artists—are the first to admit that they don't always know why a piece is deemed good. If it sells, they say, it's good.

On the other hand, buyers who try to turn their suppliers into cheap, high-volume jobbers are often disappointed. Consistent, dependable, repetitious, these people are not. One jewelry-store owner from Vancouver, British Columbia, brought down five samples of Northwest Coast Indian art—sacred symbols from a distant world—and asked a carver to knock off 100 of each. The jeweler even flew down an Indian artist to show him how. It didn't work. The carver got bored less than halfway through and began changing each piece just a little. He finally abandoned the order.

A mixed market for carvings

Buyers with more noble intentions are quick to discover that buying and selling Third World folk art is no easy business. Competition among dealers is intense, top-quality work is scarce and shipping costs from pueblo to gallery are high. Retailers in the United States must generally charge four to five times what the carvers are paid just to stay in the black. The market for carvings also is confused and fragmented. They have sold at fancy galleries for up to $3,500 and at department stores for a lot less. They have been direct-mailed out of a catalog and sawed in half and marketed as napkin holders. They can be found in art museums and tacky border-town markets.

The emergence of this art form is easy to chart. Oaxacans have carved toys for children and masks for fiestas for 500 years. The style that dominates today, however, can be traced back to the irascible 71-year-old Manuel Jiménez from the tiny village of Arrazola. It was Jiménez who first used the wood that all the carvers now use, copal, after experimenting with a dozen others. It was Jiménez who took the tradition of miniature-toy making and gave his carvings a grander scale and finer execution, and who tackled more ambitious subject matter. It was Jiménez who through his tremendous commercial success established the international market.

It wasn't easy. For 35 years, Jiménez was among the poorest peasants in a very poor village. Settled tightly at the base of Monte Albán, Arrazola is a former sugar hacienda only now recovering from a century of serfdom. Jiménez herded goats as a boy, making models of his flock in clay. For 20 years he moved from one job to another—canecutter, mason, bandleader, barber. He carved masks to sell at Monte Albán. Finally, in 1957 he was discovered by an American living in Oaxaca, Arthur Train, who launched his career.

"I've never seen another like him," Train, who has since retired, says now. "The individuality of Jiménez is unique. You say 'Three Kings' and he can visualize them, and in his own way. In all the years I was here I ran into very few people whose work really expressed something of themselves as individuals. For Jiménez that was always true."

María Jiménez Ojeda paints an angel in a floral motif that resembles her earlier embroidery designs.

A gallery of earthy delights, born of dreams and whimsy

Pair of rabbits

Miguel Ramirez **Miguel Santiago**

Two dancing chickens
Ventura Fabián

Duck musician
Adrian Xuana

Drinking skeleton
Adrian Xuana

Nahuals (animal-people)
Pedro Ramírez

Patterned cat
Margarito Melchor

Ninety percent of the carvers live in three villages near Oaxaca—Arrazola, San Martín Tilcajete and La Unión Tejalapan. Since 1986 when sales first soared, these villages have been transformed. One in three families devotes some time to carving. Buoyed by their export art, dozens of carvers have built new houses, replacing adobe or bamboo with brick. Curiously, they choose not to leave their villages; their ties to their families and communities are too strong. The most successful have bought cars. Many more have bought farmland. A few have been flown to the United States to give demonstrations as honored guests of art galleries and museums.

In the rural areas of a country like Mexico, such success is phenomenal. Squeezed by inflation and reces-

Devils are a specialty of Jaime Santiago of La Unión; he doesn't have to go far for inspiration. Every year during carnival, young boys (at right) paint themselves with tractor grease and dress up as Satan to frighten the children.

sion, the average Mexican is poorer now than he was ten years ago. These carvers are at least twice as rich. A good one can earn several hundred thousand pesos (more than $100) per week—more than an elementary school teacher, and as much as some masons earn in a month. In a successful carver's family no one is idle—fathers and older sons carve, mothers and older daughters paint, young children and elders sand.

Eleven years ago, Epifanio Fuentes was an illegal alien. Five times he crossed the border into California and was jailed each time. On the sixth try he made it for the orange harvest, working for less than the minimum wage, just as his father had done before him. "There were people who hated us," Fuentes recalls. "It was best to be invisible, do your work and go home."

Fuentes, 43, a proud, intelligent man, has since become the most successful carver in San Martín. Father of seven, he is part of an extended family of ten carvers, including his father, a brother, an uncle and two sons. Last year, Fuentes and his wife, Laurencia, who paints his figures, were invited to the Heard Museum in Phoenix as distinguished visiting artists. This time, Fuentes was anything but invisible. After being introduced to the museum's gala dinner crowd, he threw his arms up in the air like a prizefighter who had just won the heavyweight championship and then strutted around the stage like a cock. The crowd applauded.

To understand Fuentes' carving, it is important to go back to his village. Of the three carving villages, San Martín is by far the oldest, largest and richest in com-

Skeleton coyotes by Adrian Xuana are complex to carve; they are left unpainted so that intricacy of work can be seen.

Backyard tableau: four carved chickens puzzle one live turkey outside the home of Arrazola artisan José Hernández.

Epifanio Fuentes, his arms full of carved angels, finds his spiritual model in his daughter, Angelica.

Proceeds from sales of his best-selling angels helped him build finest house of any carver in San Martín.

munal tradition. Carvers proudly tell of their ancestors who paid tributes of corn and beans to build Monte Albán 2,500 years before. Pottery shards dating from the sixth century B.C. have been found on the treeless hills outside of town, on land now abandoned by all but the ghosts of local legend. An 18th-century church rises six stories into the pure desert sky, visible from every home.

Mass is well attended; 99 percent of San Martín's 2,500 people are Catholic. Families are huge and intertwined. People born here usually marry, have families and die here. There are no celebrities, not even Fuentes. This is a united town. In the last statewide election there were 317 votes for Mexico's governing Institutional Revolutionary Party, zero for the opposition. No one protested.

A rich tradition of religious fiestas inspires and shapes a carver's sensibilities. Fiestas are the fullest expression of a Oaxacan's belief in the promise of magic, of fable, of something beyond death. Every fiesta is accompanied by the village band (Fuentes plays the trumpet), so carvers make musicians. Liquor is plentiful—alcoholism is rampant in the pueblos—so carvers make drunks. Every town celebrates its own manifestation of the Virgin Mary, so carvers make Marys. Ancestors come back on the Day of the Dead; carvers make skeletons.

Fuentes is renowned for his serene, robed angels (above), and his inspiration is not far away. Last year his 7-year-old daughter was chosen as the madrina angel (an intercessor), to parade on a float carrying a floral offering to the church. She had undergone surgery shortly after birth, which corrected—miraculously, according to her father—a crippling spinal defect. In gratitude he had put her name on the list to be a madrina; her name is—what else?—Angelica.

In San Martín, no one carves musicians better than the Xuana family, and no one carves better drunks, or drinks harder himself, than Adrian Xuana. Indeed Xuana's neighbors describe his exquisite drinking skeletons as self-portraits. At age 30, bored with his life in the village, he drinks and sings in the cantinas of Oaxaca, where he studies the musicians closely. Xuana's carved musicians are exuberant, hard-drinking and comical. "People don't buy my work because it's good; they buy it because it's funny," he says.

Like the rest of rural Mexico, Oaxaca is a land rich in superstition. Goats are the devil, black dogs are good luck, snakebite cures rabies, mescal stops diarrhea and skunk meat clears up acne. Witches and other temptresses inhabit the hills outside all three villages; there's a rock in San Martín that turns into a woman at noon. And if you don't think Adrian Xuana's grandfather could really fly, try telling that to Xuana.

Fanciful carving comes not from mushrooms or mescal but from the carvers' simple willingness to imagine—with extraordinary fecundity—a world less exhausting, dreary and filled with death than their own.

"See these? These are people," says carver Ventura

Little girls dress in angel costumes for the festival honoring San Martín, the patron saint of the village.

Fabian, who perhaps best fits the image of an eccentric folk artist. He holds up a pair of dancing chickens. "They are not chickens, they are Nahuals," he says, ordinary peasants who can turn themselves into animals under a full moon. In Fabian's peculiarly private world, reality mixes with something less immediately verifiable. He lowers his voice as he cautions visitors that his niece who lives next door is a witch. His figures are the weirdest, most crudely expressive of all.

Alongside a thriving crafts industry, routine life in the pueblos of Oaxaca is dominated by the most elementary, physically demanding chores of survival. The three carving villages combined have no paved roads, no stoplights or road signs, no movie theater, no restaurant, no high school, no garbage pickup or sewage system. They have two telephones, a tiny agricultural surplus and more farm animals than people.

La Unión is a collection of adobe and bamboo huts spread thinly across a series of bare hills. Named in recognition of its inhabitants' knack for working together, La Unión is the smallest, poorest, prettiest and most remote of the three carving villages. Getting there entails crossing the same river three times, twice without benefit of a bridge.

There is only one full-time carver in the village, Jaime Santiago; the others divide the daylight hours between carving and farming on the scattered half-acre patches of corn, beans, squash and alfalfa. The small landholdings are treasured because job opportunities away from the farm are scarce. The plows are pulled by bulls.

Santiago, 31, one of the most talented, versatile carvers in the valley, lives on a hillside overlooking the village. His house has no plumbing; he must carry water by bucket from a brackish stream. His wife, Reina, spends several hours a day cooking tortillas indoors over an acrid wood fire. The couple and their three children have no latrine. Their house—made of cement—was financed by the proceeds of his carving.

Twenty lions, 30 tigers, 60 rabbits

Santiago can afford to pay someone else to work his land, so he is considered something of a miracle worker by his fellow villagers. "I have always trusted in my good luck," he says, flashing a gold-toothed smile. He also works hard and efficiently—eight hours a day, six days a week, turning out 100 small, consistently good figures a month. A typical order from a client might include 20 lions, 30 tigers and 60 rabbits. For a less talented carver such quantities could spell disaster; but Santiago has the ability to give them all slightly different poses and expressions. His rabbits, buck-toothed, wide-eyed, poised to hop or hopping, are true cartoon personalities. Santiago's pieces are painted with water-based aniline dyes. Many carvers began with aniline—another Jiménez contribution—but switched to acrylic house paints after sales picked up and clients complained that the dyes faded. "They fade, but they don't hide the grain of the wood," Santiago responds. "Many of my buyers think aniline is more authentic."

Authenticity. Indigenousness. These are perplexing concepts when applied to Oaxaca woodcarving. Does it matter where the carvers get their ideas, or for whom they work? Is their talent diminished by the fact that it has always been practiced for foreign consumption, or that their craft is barely two generations old? Questions like these engage buyers, folklorists and art historians. Happily, the artisans don't seem to care.

Miguel Santiago, 25, is one of Arrazola's finest carvers. He studies farm animals for hours. He watches dogs urinate and bay at the moon, or throws rocks at their feet to see how they move. But then he retreats to his studio-library to leaf through a ten-volume encyclopedia of the world's fauna. Some of his most graceful, realistic animals—the wild Saharan dog, for example—he has never seen, but he considers them no less "authentic" than the burros that bray outside his door. "I'm on my own, no one is teaching me, so I get my ideas from wherever I can," Santiago explains.

There are no restrictions on where the artisans can find inspiration. Three years ago Jesús Sosa of San Martín came down with a stubborn case of typhoid fever. For months he was too weak to work his regular

job as an electrician, so he started carving. While waiting for his doctor's appointment he flipped through an illustrated brochure and opened to a page on amoebic dysentery; the pictures astonished him.

"I went home and started painting amoebas on my animals," Sosa recalls—and later, perhaps more appropriately, on his skeletons. The splotches have become smaller, finer and more complicated since, but the basic motif remains the same, and it is vibrant. What's more, it sells. Thanks in large part to a pest that infects half the population of southern Mexico, Sosa is building his new two-story house.

Next door to Sosa, Coindo Melchor hit upon his best-seller, the mysterious, bird-headed women, in a paperback book on mythical figures. His son, Inocente, takes ideas from calendars, with beautiful results; another son, Jesús, gets his cows from live models kept ten yards from his bed. When Coindo is asked about the myth behind the bird women he makes, he doesn't know. He can barely read. Stolen or inspired, "an idea is simply an idea, and anyone can have one," Jaime Santiago says. "It is the artisan who must use talent to give it life, and that's the hard part."

The tools of the woodcarver are as simple as the inspiration is eclectic. Most of the work is done with machetes, and kitchen and pocket knives. The wood comes from the copal tree, hardwood that once grew in abundance on the hills around the Oaxaca Valley. "It was a fourth-class wood," good for nothing until carving came along, Epifanio Fuentes says.

Carvers cope with all kinds of hazards

When the copal is green it is soft and readily worked. It does not split easily and it sands to a smooth finish. Still, carving it is difficult. Adrian Xuana's brother, Abad, once sliced into his wrist and narrowly missed a vein, which popped up out of his arm. He pushed it back in, bandaged the wrist and resumed carving the next day. He was a novice at the time, he explains. Knives are filed daily, sometimes twice a day. The sharper the knife, the less likely the carver is to cut himself. Two liquids are recommended to staunch the bleeding in a nasty cut. One is gasoline (in Mexico it's usually leaded). The other is urine.

Once carved, a piece is adorned with the simplest of materials. Ventura Fabian cuts the hair off his 9-year-old son to make his paintbrushes. He glues goat hair from his own herd down the backs of his wooden goats and pigs, and snaps off cactus spines for their teeth. Gabino Reyes of La Unión uses pig hair for the tiny whiskers on his armadillos.

"Carving is in a peasant's blood," explains Alejandrino Fuentes, Epifanio's brother, a trained engineer who left his profession to carve. "A peasant carries his machete like a friend; it's indispensable. We use it to cut roots when we plow and clear paths when we need to. There's always a chance that you'll run into a snake. Or for that matter a Nahual or a witch"—against whom a machete is considered the best defense.

The final ingredient in any crafts renaissance is a willing buyer. Natural talent notwithstanding, this boom has always been dealer-driven. Wholesalers have scoured the villages, bartering Reeboks and VCRs and cassette players for carved wooden figures, bringing in high-quality tools.

How long will it last, this serendipitous interplay of market forces and creative spirit? Some carvers, their

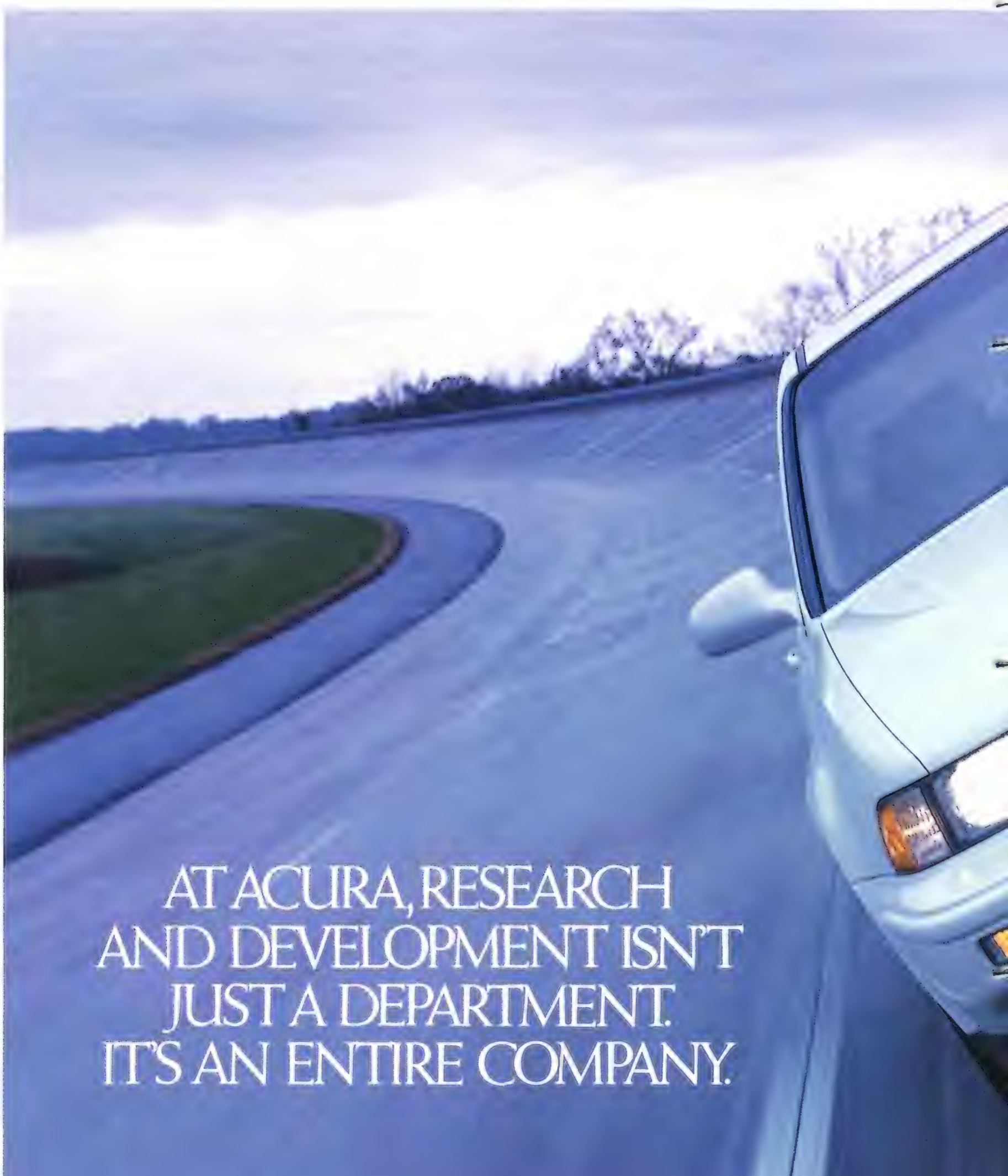
José Hernández shows off one of his best works, an acrylic-painted giraffe with tail made of maguey fiber.

sales declining, have already gone off to work illegally in the United States. Plenty remain successful, of course, and seem to have established enough of a following to insulate them from the market's inevitable ups and downs—some because they are especially talented, others because they sell cheap.

Still, the carvers are wary. The better ones have become more worldly in recent years, and they are working like there is no tomorrow. The Coindo Melchor family sometimes works all night, painting by candlelight after the electricity goes out, as it often does in the pueblos. Next door, Jesús Sosa frequently pulls all-nighters to finish his orders on schedule.

Like so many poorer Mexicans, Sosa has bounced through a long string of jobs, each one ending for reasons beyond his control. Since 1981 he has been an electrician, has worked on two government jobs, and has raised, slaughtered and cooked pigs. He keeps bees. He was unemployed or underemployed for three years, until carving came along. Sosa is 33. "This work has been a blessing from God," he says, "but who knows how long it will last? That's why we have to work night and day. Frankly, I don't take a day of rest. We never stop working. While I sleep, my wife paints. I'm trying to finish my house. When the good times pass, when the buyers stop coming, I want to at least have the house."

Like so many Mexicans, he has daring color sense, seen here in woodcarving and paint he chose for his home.



To the engineers at Acura, the pursuit of new technology is valued so highly, research and development exists as a totally independent company. An environment where engineers are encouraged not only to dream the impossible, but given the means to achieve it. Case in point, the new Legend. While the longitudinally mounted, 3.2-liter, 24-valve V-6 engine offers 25% more power and 30% more torque than it did before, it also provides reduced noise and vibration.

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A redesigned, independent double-wishbone suspension enhances handling and road feel. And for safety's sake, the Legend is equipped with standard anti-lock brakes, a driver's side air bag and an available passenger's side air bag. Features that make the new Legend Sedan stand alone. Much like the company that builds it. Call 1-800-TO-ACURA for information or the nearest dealer.

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Losses at Gallipoli in 1915 (above) helped commit the British to a major postwar role in the Middle East.

By David Fromkin

How the modern Middle East map came to be drawn

When the Ottoman Empire collapsed in 1918, the British created new borders (and rulers) to keep the peace and protect their interests

The dictator of Iraq claimed—falsely—that until 1914 Kuwait had been administered from Iraq, that historically Kuwait was a part of Iraq, that the separation of Kuwait from Iraq was an arbitrary decision of Great Britain's after World War I. The year was 1961; the Iraqi dictator was Abdul-Karim Qasim; and the dispatch of British troops averted a threatened invasion.

Iraq, claiming that it had never recognized the British-drawn frontier with Kuwait, demanded full access to the Persian Gulf; and when Kuwait failed to agree, Iraqi tanks and infantry attacked Kuwait. The year was 1973; the Iraqi dictator was Ahmad Hasan al-Bakr; when other Arab states came to Kuwait's support, a deal was struck, Kuwait made a payment of money to Iraq, and the troops withdrew.

August 2, 1990. At 2 A.M. Iraqi forces swept across the Kuwaiti frontier. Iraq's dictator, Saddam Hussein, declared that the frontier between Iraq and Kuwait was invalid, a creation of the British after World War I, and that Kuwait really belonged to Iraq.

It was, of course, true, as one Iraqi dictator after another claimed, that the exact Iraq-Kuwait frontier

Ottoman Empire was drawn into war on German side through secret machinations of Enver Pasha (right).

As a Young Turk reformer, Enver helped overthrow the Ottoman government, at 31 became Minister of War.

was a line drawn on an empty map by a British civil servant in the early 1920s. But Kuwait began to emerge as an independent entity in the early 1700s—two centuries before Britain invented Iraq. Moreover, most other frontiers between states of the Middle East were also creations of the British (or the French). The map of the Arab Middle East was drawn by the victorious Allies when they took over these lands from the Ottoman Empire after World War I. By proposing to nullify that map, Saddam Hussein at a minimum was trying to turn the clock back by almost a century.

A hundred years ago, when Ottoman governors in Basra were futilely attempting to assert authority over the autonomous sheikdom of Kuwait, most of the Arabic-speaking Middle East was at least nominally part of the Ottoman Empire. It had been so for hundreds of years and would remain so until the end of World War I.

The Ottomans, a dynasty, not a nationality, were originally a band of Turkish warriors who first galloped onto the stage of history in the 13th century. By the early 20th century the Ottoman Empire, which once had stretched to the gates of Vienna, was shrinking rapidly, though it still ruled perhaps 20 million to 25 million people in the Middle East and elsewhere, comprising perhaps a dozen or more different nationalities. It was a ramshackle Muslim empire, held together by the glue of Islam, and the lot of its non-Muslim population (perhaps 5 million) was often unhappy and sometimes tragic.

In the year 1900, if you traveled from the United States to the Middle East, you might have landed in Egypt, part of the Ottoman Empire in name but in fact governed by British "advisers." The Egyptian Army was commanded by an English general, and the real ruler of the country was the British Agent and Consul-General—a position to which the crusty Horatio Herbert Kitchener was appointed in 1911.

The center of your social life in all likelihood would have been the British enclave in Cairo, which possessed (wrote one of Lord Kitchener's aides) "all the narrowness and provincialism of an English garrison town." The social schedule of British officials and their families revolved around the balls given at each of the lead-

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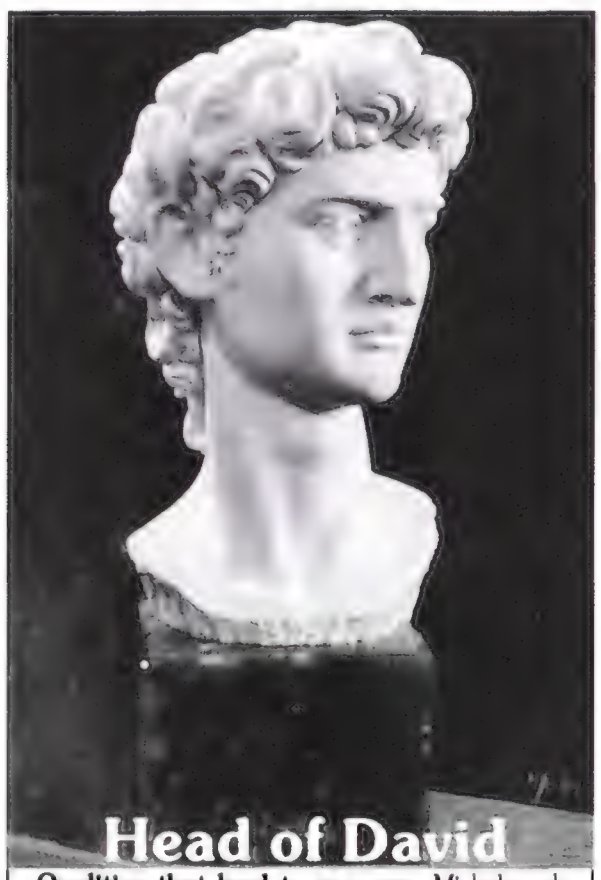
ing hotels in turn, six nights out of seven, and before dark, around the Turf Club and the Sporting Club on the island of El Gezira. Throughout Egypt, Turkish officials, Turkish police and a Turkish army were conspicuous by their absence. Outside British confines you found yourself not in a Turkish-speaking country but in an Arabic-speaking one. Following the advice of the *Baedeker*, you'd likely engage a dragoman—a translator and guide—of whom there were about 90 in Cairo ("all more or less intelligent and able, but scarcely a half of the number are trustworthy").

On leaving Egypt, if you turned north through the Holy Land and the Levant toward Anatolia, you finally would have encountered the reality of Ottoman government, however corrupt and inefficient, though many cities—Jerusalem (mostly Jewish), Damascus (mostly Arab) and Smyrna, now Izmir (mostly Greek)—were not at all Turkish in character or population.

Though he was blamed for Gallipoli, Winston Churchill was put in charge of reorganizing the entire Middle East.

Heading south by steamer down the Red Sea and around the enormous Arabian Peninsula was a very different matter. Nominally Ottoman, Arabia was in large part a vast, ungoverned desert wilderness through which roamed bedouin tribes knowing no law but their own. In those days Abdul Aziz ibn Saud, the youthful scion of deposed lords of most of the peninsula, was living in exile, dreaming of a return to reclaim his rights and establish his dominion. In the port towns on the Persian Gulf, ruling sheiks paid lip service to Ottoman rule but in fact their sheikdoms were protectorates of Great Britain. Not long after you passed Kuwait (see the map on page 147) you reached Basra, in what is now Iraq, up a river formed by the union of the great Tigris and Euphrates.

A muddy, unhealthy port of heterogeneous population, Basra was then the capital of a province, largely Shiite Arab, ruled by an Ottoman governor. Well north of it, celebrated for archaeological sites like Babylon and Nippur, which drew tourists, lay Baghdad, then a heavily Jewish city



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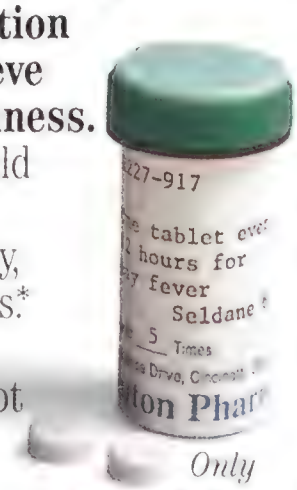

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*Definition of "risk of drowsiness" is incidence greater than placebo (a sugar pill).
†The reported incidence of drowsiness with Seldane (5.8%) in clinical studies involving more than 11,000 patients did not differ significantly from that reported in patients receiving placebo (6.9%).
‡Based upon worldwide prescription and distribution information (1986-1990)–data on file, Marion Merrell Dow Inc.
SEE BRIEF SUMMARY OF PRESCRIBING INFORMATION ON NEXT PAGE.

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Seldane®

(terfenadine) 60 mg Tablets

BRIEF SUMMARY

CAUTION: Federal law prohibits dispensing without pres

DESCRIPTION

Seldane

starch, gelatin, lactose, m

INDICATIONS AND USAGE

Seldane is indicated for the relief of symptoms associated with seasonal allergic rhinitis such as sneezing, rhinorrhea, pruritus a lacrimation.

CONTRAINDICATIONS

Seldane is contraindicated in patients with a known hypersensitivity to terfenadine or any of its ingredients.

PRECAUTIONS

General: Terfenadine metabolism in the liver. Patients with impaired hepatic functi hepatitis) or on ketoconazole or troleandomycin therapy or having s leading to QT prolongation (e.g. congenital QT syndrome) may experience QT prolongation and/or ventricular tachycardia at the recommended dose. The effect of terfenadine in patients who are receiving agents which alter the QT interval is not known. These events have also occurred in patients on macrolide antibiotics, including erythromycin, but causality is unclear. The events may be related to altered metabolism of the drug to electrolyte imbalance, or both.

Information for patients: Patients taking Seldane should receive the following information and instructions. Antihistamines are prescribed to reduce allergic symptoms. Patients should be questioned about pregnancy or lactation before tion only if the potential benefit justifies the potential risk to fetus or baby. Patients should be instructed to take Seldane only as needed and not to exceed the prescribed dose. Patients should also be instructed to store this m in a tightly closed container in a cool, dry place, away from heat or direct sunlight, and away from children.

Drug Interactions: Preliminary evidence exists that concurrent ketoconazole or macrolide administration significantly alters the metabolism of terfenadine. Concurrent use of Seldane with ketoconazole or troleandomycin is not recommended. Concurrent use of other macrolides should be approached with caution.

Carcinogenesis, mutagenesis, impairment of fertility: Oral doses of terfenadine, corresponding to 63 times the recommended human daily dose, in mice for 18 months or in rats for 24 months, revealed no evidence of tumorigenicity. Microbial and micronucleus test assays with terfenadine have revealed no evidence of mutagenesis.

Reproduction and fertility studies in rats showed no effects on male or female fertility at oral doses of up to 21 times the human daily dose. At 63 times the human daily dose there was a small but significant reduction in implants and at 125 times the human daily dose reduced implants and increased postimplantation losses were observed, which were judged to be secondary to maternal toxicity.

Pregnancy Category C: There was no evidence of animal teratogenicity. Reproduction studies have been performed in rats at doses 63 times and 125 times the human daily dose and have revealed decreased pup weight gain and survival when terfenadine was administered throughout pregnancy and lactation. There are no adequate and well-controlled studies in pregnant women. Seldane should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nonteratogenic effects: Seldane is not recommended for nursing women. The drug has caused decreased pup weight gain and survival in rats given doses 63 times and 125 times the human daily dose throughout pregnancy and lactation. Effects on pups exposed to Seldane only during lactation are not known, and there are no adequate and well-controlled studies in women during lactation.

Pediatric use: Safety and effectiveness of Seldane in children below the age of 12 years have not been established.

ADVERSE REACTIONS

Experience from clinical studies, including both controlled and uncontrolled studies involving more than 2,400 patients who received Seldane, provides information on adverse experience incidence for periods of a few days up to six months. The usual dose in these studies was 60 mg twice daily but in a small number of patients, the dose was as low as 20 mg twice a day or as high as 600 mg daily.

In controlled clinical studies using the recommended dose of 60 mg b.i.d., the incidence of reported adverse effects in patients receiving Seldane was similar to that reported in patients receiving placebo. (See Table below.)

ADVERSE EVENTS REPORTED IN CLINICAL TRIALS

Adverse Event	Percent of Patients Reporting				
	Controlled Studies*			All Clinical Studies**	
	Seldane N=781	Placebo N=665	Control N=626***	Seldane N=2462	Placebo N=1478
Central Nervous System:					
Drowsiness	9.0	8.1	18.1	8.5	8.2
Headache	6.3	7.4	3.8	15.8	11.2
Fatigue	2.9	0.9	5.8	4.5	3.0
Dizziness	1.4	1.1	1.0	1.5	1.2
Nervousness	0.9	0.2	0.6	1.7	1.0
Weakness	0.9	0.6	0.2	0.6	0.5
Appetite increase	0.6	0.0	0.0	0.5	0.0
Gastrointestinal System:					
Gastrointestinal Distress (Abdominal distress, Nausea, Vomiting, Change in Bowel habits)	4.6				5.4
Eye, Ear, Nose, and Throat:					
Dry Mouth, Nose, Throat				4.5	3.1
Cough					1.7
Sore Throat					1.6
Epistaxis					1.4
Skin:					
Eruption (including rash and urticaria) or itching		1.7	1.4		

*Duration of treatment in CONTROLLED STUDIES was usually 7-14 DAYS.
**Duration of treatment in ALL CLINICAL STUDIES was up to 6 months.
***CONTROL DRUGS: Chlorpheniramine (291 patients), d Chlorpheniramine (189 patients), Clemastine (146 patients).

Rare reports of severe cardiovascular adverse effects have been received which include arrhythmias (ventricular tachyarrhythmia, torsades de pointes, ventricular fibrillation), hypotension, palpitations, and syncope. In controlled clinical trials in otherwise normal patients with rhinitis, at doses of 60 mg b.i.d. small increases in QTc interval were observed. Changes of this magnitude in a normal population are of doubtful clinical significance. However, in another study (N=20 patients) at 300 mg b.i.d. a mean increase in QTc of 10% (range −4% to +30%) (mean increase of 46 msec) was observed without clinical signs or symptoms.

In addition to the more frequent side effects reported in clinical trials (See Table), adverse effects have been reported at a lower incidence in clinical trials and/or spontaneously during marketing of Seldane that warrant listing as possibly associated with drug administration. These include: alopecia (hair loss or thinning), anaphylaxis, angioedema, bronchospasm, confusion, depression, galactorrhea, insomnia, menstrual disorders (including dysmenorrhea), musculoskeletal symptoms, nightmares, paresthesia, photosensitivity, seizures, sinus tachycardia, sweating, tremor, urinary frequency, and visual disturbance.

In clinical trials, several instances of mild, or in one case, moderate transaminase elevations were seen in patients receiving Seldane. Mild elevations were also seen in placebo-treated patients. Marketing experiences include isolated reports of jaundice, cholestatic hepatitis, and hepatitis. In most cases available information is incomplete.

OVERDOSAGE

Information concerning possible overdosage and its treatment appears in Full Prescribing Information.

DOSAGE AND ADMINISTRATION

One tablet (60 mg) twice daily for adults and children 12 years and older.

Product Information as of July 1990

MARION MERRELL DOW INC.
Prescription Products Division
Kansas City, MO 64114

SELAE 302/A1895
6130B1

(along with Jerusalem, one of the two great Jewish cities of Asia). Baghdad was the administrative center of an Ottoman province that was in large part Sunni Arab. Farther north still was a third Ottoman province, with a large population of Kurds. Taken together, the three roughly equaled the present area of Iraq.

Ottoman rule in some parts of the Middle East clearly was more imaginary than real. And even in those portions of the empire that Turkish governors did govern, the population was often too diverse to be governed effectively by a single regime. Yet the hold of the Turkish sultan on the empire's peoples lingered on. Indeed, had World War I not intervened, the Ottoman Empire might well have lasted many decades more.

In its origins, the war that would change the map of the Middle East had nothing to do with that region. How the Ottoman Empire came to be involved in the war at all—and lost it—and how the triumphant Allies found themselves in a position to redesign the Middle Eastern lands the Turks had ruled, is one of the most fascinating stories of the 20th century, rich in consequences that we are still struggling with today.

The story begins with one man, a tiny, vain, strutting man addicted to dramatic gestures and uniforms. He was Enver Pasha, and he mistook himself for a sort of Napoleon. Of modest origins, Enver, as a junior officer in the Ottoman Army, joined the Young Turks, a secret society that was plotting against the Ottoman regime. In 1913, Enver led a Young Turk raiding party that overthrew the government and killed the Minister of War. In 1914, at the age of 31, he became the Ottoman Minister of War himself, married the niece of the sultan and moved into a palace.

As a new political figure Enver scored a major, instant success. The Young Turks for years had urgently sought a European ally that would promise to protect the Ottoman Empire against other European powers. Britain, France and Russia had each been approached and had refused; but on August 1, 1914, just as Germany was about to invade Belgium to begin World War I, Enver wangled a secret

British camel unit jogs down the Jordan Valley; Prince Faisal and T. E. Lawrence often used camels in guerrilla raids on Turks.

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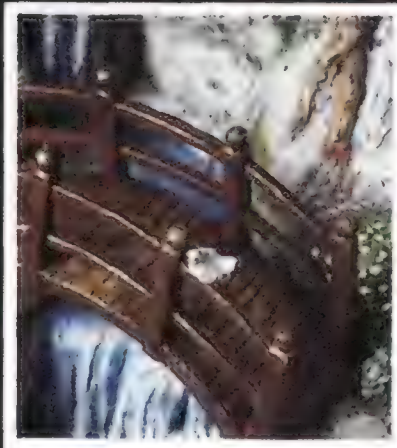

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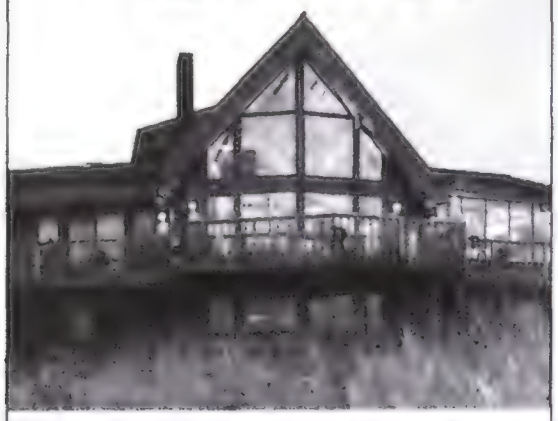

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treaty with the kaiser pledging to protect the Ottoman domains.

Unaware of Enver's coup, and with war added to the equation, Britain and France began wooing Turkey too, while the Turks played off one side against the other. By autumn the German Army's plan to knock France out of the war in six weeks had failed. Needing help, Germany urged the Ottoman Empire to join the war by attacking Russia.

Though Enver's colleagues in the Turkish government were opposed to war, Enver had a different idea. To him the time seemed ripe: in the first month of the war German armies overwhelmingly turned back a Russian attack on East Prussia, and a collapse of the czar's armies appeared imminent. Seeing a chance to share in the spoils of a likely German victory over Russia, Enver entered into a private conspiracy with the German admiral commanding the powerful warship *Goeben* and its companion vessel, the *Breslau*, which had taken refuge in Turkish waters at the outset of hostilities.

During the last week of October, Enver secretly arranged for the *Goeben* and the *Breslau* to escape into the Black Sea and steam toward Russia. Flying the Ottoman flag, the Germans then opened fire on the Russian coast. Thinking themselves attacked by Turks, the Russians declared war. Russia's allies, Britain and France, thus found themselves at war with the Ottoman Empire too. By needlessly plunging the empire into war, Enver had put everything in the Middle East up for grabs. In that sense, he was the father of the modern Middle East. Had Enver never existed, the Turkish flag might even yet be flying—if only in some confederal way—over Beirut and Damascus, Baghdad and Jerusalem.

Great Britain had propped up the Ottoman Empire for generations as a buffer against Russian expansionism.

Lawyer-historian David Fromkin is the author of a prizewinning book entitled A Peace to End All Peace.

Now, with Russia as Britain's shaky ally, once the war had been won and the Ottomans overthrown, the Allies would be able to reshape the entire Middle East. It would be one of those magic moments in history when fresh starts beckon and dreams become realities.

"What is to prevent the Jews having Palestine and restoring a real Judaea?" asked H. G. Wells, the British novelist, essayist and prophet of a rational future for mankind. The Greeks, the French and the Italians also had claims to Middle East territory. And naturally, in Cairo, Lord Kitchener's aides soon began to contemplate a future plan for an Arab world to be ruled by Egypt, which in turn would continue to be controlled by themselves.

At the time, the Allies already had their hands full with war against Germany on the Western Front. They resolved not to be distracted by the Middle East until later. The issues and ambitions there were too divisive. Hardly had the Ottoman Empire entered the war, however, when Enver stirred the pot again. He took personal command of the Ottoman Third Army on the Caucasus frontier and, in the dead of winter, launched a foolhardy attack against fortified positions on high ground. His offensive was hopeless, since it was both amateurishly planned and executed, but the czar's generals panicked anyway. The Russian government begged Lord Kitchener (now serving in London as Secretary of State for War) to stage a more or less instant diversionary action. The result was the Allied attack on the Dardanelles, the strait that eventually leads to Constantinople (now Istanbul).

Enver soon lost about 86,000 of his 100,000 men; the few, bloodied survivors straggled back through icy mountain passes. A German observer noted that Enver's army had "suffered a disaster which for rapidity and completeness is without parallel in military history." But nobody in the Russian government or high command bothered to tell the British that mounting a Dardanelles naval attack was no longer necessary. So on the morning of February 19, 1915, British ships fired the opening shots in what became a tragic campaign.

Initially, the British Navy seemed poised to take Constantinople, and Russia panicked again. What if the British, having occupied Constantinople, were to hold onto it? The 50 percent of Russia's export trade flowing through the strait would then do so only with British permission. Czar Nicholas II demanded immediate assurance that Constantinople would be Russia's in the postwar world. Fearing Russia might withdraw from the war, Britain and France agreed. In return, Russia offered to

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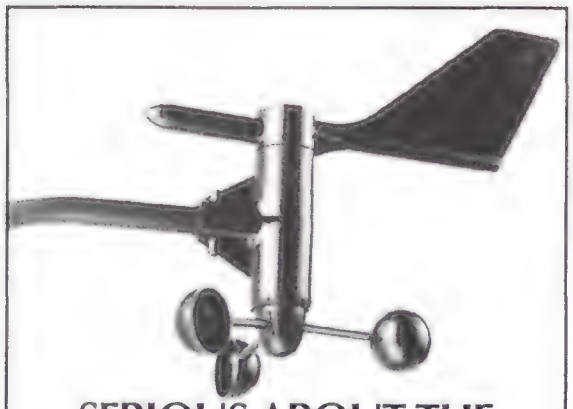

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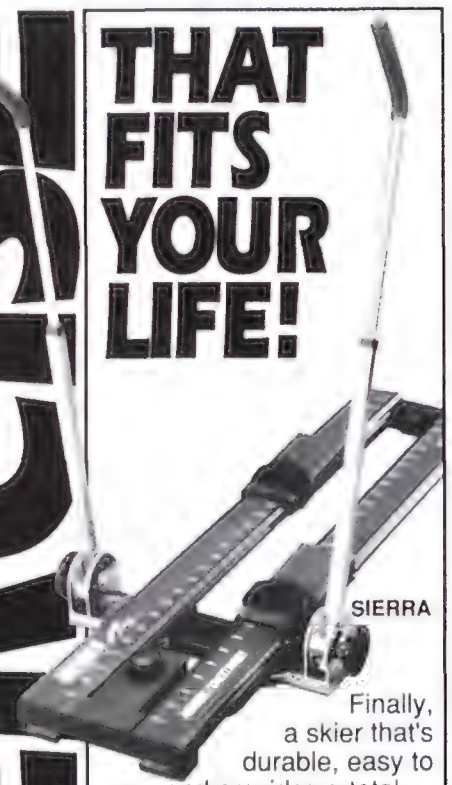

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support British and French claims in other parts of the Middle East.

With that in mind, on April 8, 1915, the British Prime Minister appointed a committee to define Britain's postwar goals in the Middle East. It was a committee dominated by Lord Kitchener through his personal representative, 36-year-old Sir Mark Sykes, one of many remarkable characters, including Winston Churchill and T. E. Lawrence, to be involved in the remaking (and remapping) of the Middle East.

A restless soul who had moved from school to school as a child, Sykes left college without graduating, and thereafter never liked to stay long in one spot. A Tory Member of Parliament, before the war he had traveled widely in Asiatic Turkey, publishing accounts of his journeys. Sykes' views tended to be passionate but changeable, and his talent for clever exaggeration sometimes carried over into his politics.

As a traditional Tory he had regarded the sultan's domains as a useful buffer protecting Britain's road to India against Britain's imperial rivals, the czar chief among them. Only 15 months earlier, Sykes was warning the House of Commons that "the disappearance of the Ottoman Empire must be the first step towards the disappearance of our own." Yet between 1915 and 1919, he busily planned the dismantling of the Ottoman Empire.

The Allied attack on the Dardanelles ended with Gallipoli, a disaster told and retold in books and films. Neither that defeat, nor the darkest days of 1916-17, when it looked for a while as though the Allies might lose the war, stopped British planning about how to cut up the Turkish Middle East. Steadily but secretly Sykes worked on. As the fight to overthrow the Ottoman Empire grew more intense, the elements he had to take into account grew more complex.

It was clear that the British needed to maintain control over the Suez Canal, and all the rest of the route to

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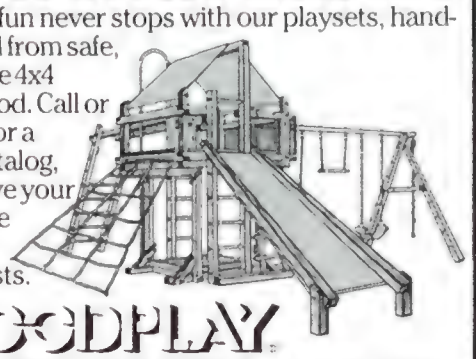

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their prized colonial possession, India. They needed to keep the Russians and Germans and Italians and French in check. Especially the French, who had claims on Syria. But with millions of men committed to trench warfare in Europe, they could not drain off forces for the Middle East. Instead, units of the British Indian Army along with other Commonwealth forces attacked in the east in what are now Iraq and Iran, occupying Basra, Baghdad and eventually Mosul. Meanwhile, Allied liaison officers, including notably T. E. Lawrence, began encouraging the smallish group of Arabian tribesmen following Emir (later King) Hussein of the Hejaz, who had rebelled against the Turks, to fight a guerrilla campaign against Turkish forces.

Throughout 1917, in and near the Hejaz area of Arabia (see map), the Arabs attacked the railway line that supported Turkish troops in Medina. The "Arab Revolt" had little military effect on the outcome of the war, yet the fighting brought to the fore, as British clients and potential Arab leaders, not only Hussein of the Hejaz, but two of his sons, Faisal and Abdullah. Both were deadly rivals of Ibn Saud, who by then had become a rising power in Arabia and a client of the British too.

British officials in Cairo deluded themselves and others into believing that the whole of the Arabic-speaking half of the Ottoman Empire might rise up and come over to the Allied side. When the time came, the Arab world did not follow the lead of Hussein, Abdullah and Faisal. But Arab aspirations and British gratitude began to loom large in British, and Arab, plans for the future. Sykes now felt he had to take Arab ambitions into account in his future planning, though he neglected those of Ibn Saud (father of today's Saudi king), who also deserved well of Britain.

By 1917 Sykes was also convinced that it was vital for the British war effort to win Jewish support against Germany, and that pledging support for Zionism could win it. That year his efforts and those of others resulted in the publication of a statement by Arthur James Balfour, the British Foreign Secretary, expressing Britain's support for the establishment of a Jewish national home in Palestine.

The year 1917 proved to be a turning point. In the wake of its revolution Russia pulled out of the war, but the entrance by the United States on the Allied side insured the Allies a victory—if they could hold on long enough for U.S. troops to arrive in force. In the Middle East, as British India consolidated its hold on areas that are now part of Iraq, Gen. Edmund Allenby's Egyptian-based British army began fighting its way north from Suez to Damascus. Lawrence and a force of Arab raiders

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captured the Red Sea port of Aqaba (near the point where Israel and Jordan now meet). Then, still other Arabs, with Faisal in command, moved north to harass the Turkish flank.

By October 1918, Allenby had taken Syria and Lebanon, and was poised to invade what is now Turkey. But there was no need to do so, because on October 31 the Ottoman Empire surrendered.

As the Peace Conference convened in Paris, in February 1919, Sykes, who had been rethinking Britain's design for the Middle East, suddenly fell ill and died. At first there was nobody to take his place as the British government's overall Middle East planner. Prime Minister David Lloyd George took personal charge in many Middle East matters. But more and more, as the months went by, Winston Churchill had begun to play a major role, gradually superseding the others.

Accordingly, early that year the ambitious 45-year-old politician was asked by the Prime Minister to serve as both War Minister and Air Minister. ("Of course," Lloyd George wrote Churchill, "there will be but one salary!") Maintaining the peace in the captured—and now occupied—Arab Middle East was among Churchill's new responsibilities.

Cheerful, controversial and belligerent, Churchill was not yet the revered figure who would so inspire his countrymen and the world in 1940. Haunted by the specter of a brilliant father, he had won fame and high office early, but was widely distrusted, in part for having switched political parties. Churchill's foresighted administration of the Admiralty in the summer of 1914 won universal praise, but then the botched Dardanelles campaign, perhaps unfairly, was blamed on him. As a Conservative newspaper put it, "we have watched his brilliant and erratic course in the confident expectation that sooner or later he would make a mess of anything he undertook." In making Churchill minister of both War and Air in 1919, Lloyd George was giving his protégé a try at a political comeback.

By the end of the war, everyone was so used to the bickering among the

After the final surrender of the Turks, on October 31, 1918, the question was: How to administer the remains of the Ottoman Empire?

Early planning for postwar Middle East fell to Sir Mark Sykes, whose work grew in complexity as rival Allied and Arab claims evolved.

Allies about who was going to get what in the postwar Middle East that the alternative—nobody taking anything—simply didn't enter into the equation. Churchill was perhaps the only statesman to consider that possibility. He foresaw that many problems would arise from trying to impose a new political design on so troubled a region, and thought it unwise to make the attempt. Churchill argued, in fact, for simply retaining a reformed version of the Ottoman Empire. Nobody took him seriously.

After the war, a British army of a million men, the only cohesive military force in the region, briefly occupied the Middle East. Even as his real work began, however, Churchill was confronted with demands that the army, exhausted from years of war, be demobilized. He understood what meeting those demands meant. Relying on that army, Prime Minister Lloyd George had decided to keep the whole Arab Middle East under British influence; in the words he once used about Palestine: "We shall be there by conquest and shall remain." Now Churchill repeatedly warned that once British troops were withdrawn, Britain would not be able to impose its terms.

Lloyd George had predicted that it would take about a week to agree on the terms of peace to be imposed on the defeated Ottoman Empire. Instead it took nearly two years. By then, in Churchill's words, the British army of occupation had long since "melted away," with the dire consequences he predicted.

In Egypt, demonstrations, strikes and riots broke out. In Arabia, Ibn Saud, though himself a British client, defeated and threatened to destroy Britain's protégé Hussein. In Turkey, the defeated Enver had long since fled the country to find refuge in Berlin. From there he journeyed to Russia, assumed leadership of Bukhara (in what is now the Uzbek Republic of the USSR) in its struggle for independence from Moscow, and was killed in battle against the Red Army of the Soviet Union in 1922. Turkish nationalists under the great Ottoman general Mustafa Kemal (later known as Kemal Ataturk) rebelled against the Allied-imposed treaty and later

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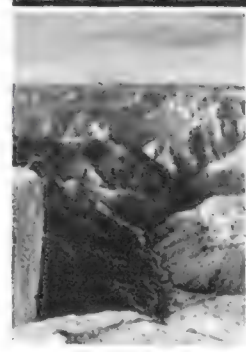

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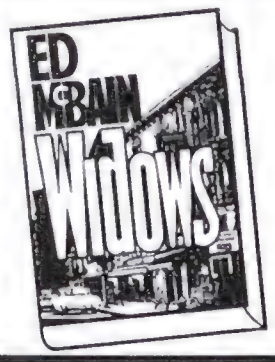

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proclaimed the national state that is modern Turkey.

In Palestine, Arabs rioted against Jews. In what is now Saddam Hussein's Iraq, armed revolts by the tribes, sparked in the first instance by the imposition of taxes, caused thousands of casualties. "How much longer," the outraged London *Times* asked, "are valuable lives to be sacrificed in the vain endeavour to impose upon the Arab population an elaborate and expensive administration which they never asked for and do not want?"

By the end of 1920, Lloyd George's Middle East policy was under attack from all sides. Churchill, who had warned all along that peacetime Britain, in the grip of an economic collapse, had neither the money, the troops, nor the will to coerce the Middle East, was proved right—and placed even more directly in charge. On New Year's Day 1921 he was appointed Colonial Secretary, and soon began to expand his powers, consolidating within his new department responsibility for all Britain's domains in Arabic-speaking Asia.

He assembled his staff by combing the government for its ablest and

Prime Minister Lloyd George (right) sought full control of the Middle East.

Conference delegates in Amman, 1921, included T. E. Lawrence and Prince Abdullah (third and fifth from left). Abdullah was soon to be made governor of new, temporary territory of Transjordan.

most experienced officials. The one offbeat appointment was T. E. Lawrence. A young American journalist and promoter named Lowell Thomas, roaming the Middle East in search of a story, had found Lawrence dressed in Arab robes, and proceeded to make him world-famous as "Lawrence of Arabia." A complex personality, Lawrence was chronically insubordinate, but Churchill admired all the wonderful stories he'd heard of Lawrence's wartime exploits.

Seeking to forge a working consensus among his staff in London and his men in the field, Churchill invited them all to a conference that opened in Cairo on March 12, 1921. During the ten-day session held in the Semiramis Hotel, about 40 experts were in attendance. "Everybody Middle East is here," wrote Lawrence.

Egypt was not on the agenda. Its fate was being settled separately by its new British proconsul, Lord Allenby. In 1922 he established it as an independent kingdom, still largely subject to British control under terms of a unilateral proclamation that neither Egypt's politicians nor its new king, Fuad, accepted.

All Britain's other wartime conquests—the lands now called Israel, the West Bank, Jordan and Iraq—were very much on the agenda, while the fate of Syria and Lebanon, which Britain had also conquered, was on everybody's mind. In the immediate aftermath of the war, it was control of Syria that had caused the most problems, as Lloyd George tried to keep it for Britain by placing it under the rule of Lawrence's comrade-in-arms, Prince Faisal, son of Hussein. After Syria declared its independence, the French fought back. Occupying

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all of Syria-Lebanon, they drove Faisal into exile. The French also devised a new frontier for Lebanon that invited eventual disaster, as would become evident in the 1970s and '80s. They refused to see that the Muslim population was deeply hostile to their rule.

Churchill, meanwhile, was confronted by constant Arab disturbances in Palestine. West of the Jordan River, where the Jewish population lived, Arabs fought against Jewish immigration, claiming—wrongly, as the future was to show—that the country was too barren to support more than its existing 600,000 inhabitants. Churchill rejected that view, and dealt with the Arab objections to a Jewish homeland by keeping—though redefining—Britain's commitment to Zionism. As he saw it, there was to be a Jewish homeland in Palestine, but other homelands could exist there as well.

The 75 percent of Palestine east of the Jordan River (Transjordan, as it was called, until it became Jordan in 1950) was lawless. Lacking the troops to police it and wanting to avert addi-

A force to be reckoned with, young Ibn Saud would soon take control of all of today's Saudi Arabia.

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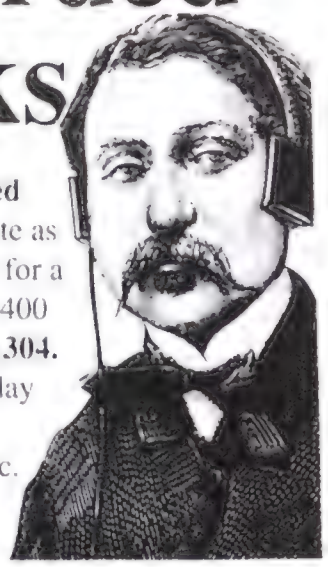

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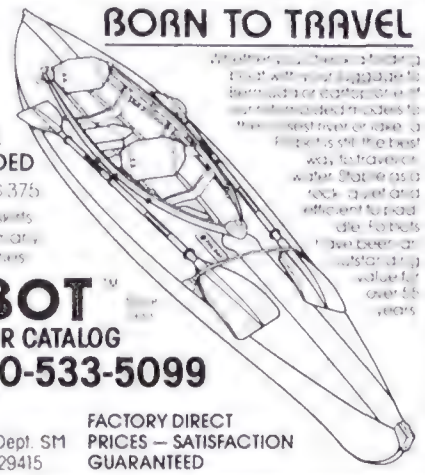

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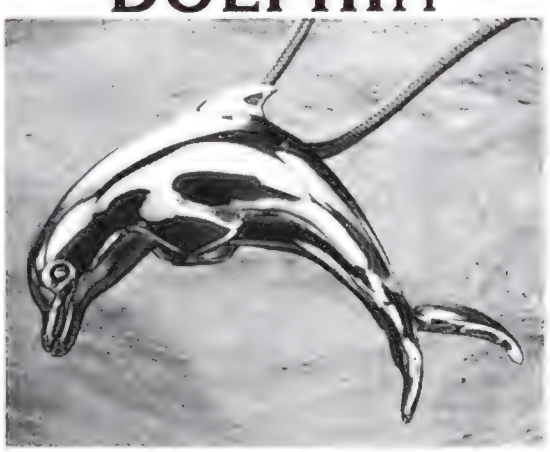

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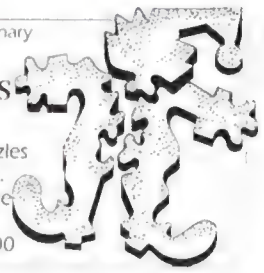

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Map shows the Middle East redrawn by the British as of 1922. Iraq has just been created out of three more or less incompatible Ottoman provinces. Part of Palestine has become Transjordan (today's Jordan), which is still ruled by one of Abdullah's descendants.

tional causes of strife, Churchill decided to forbid Jews from settling there, temporarily at least.

Fittingly while still War and Air Minister, Churchill had devised a strategy for controlling the Middle East with a minimum number of British troops by using an economical combination of airpower and armored cars. But it would take time for the necessary units to be put in place. Meanwhile tribal fighting had to be contained somehow. As the Cairo conference met, news arrived that Abdullah, Faisal's brother, claiming to need "a change of air for his health," had left Arabia with a retinue of bedouin warriors and entered Transjordan. The British feared that Abdullah would attack French Syria and so give the French an excuse to invade Transjordan, as a first step toward taking over all Palestine.

As a temporary expedient Churchill appointed Abdullah as governor of a Transjordan to be administratively detached from the rest of Palestine. He charged him with keeping order by his prestige and with his own bedouin followers—at least until Britain's

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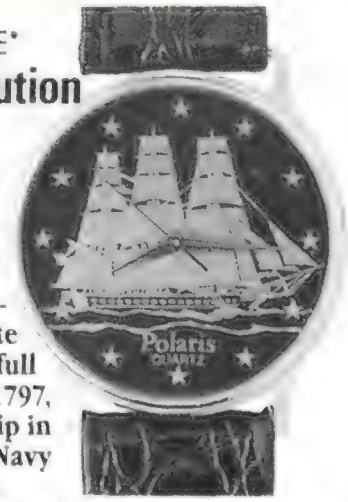

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aircraft and armored cars were in place. This provisional solution has lasted for seven decades and so have the borders of Transjordan, now ruled over by Abdullah's grandson, Hussein, the Hashemite King of Jordan.

The appointment of Abdullah seemed to accomplish several objectives at once. It went partway toward paying what Lawrence and others told Churchill was Britain's wartime debt to the family of King Hussein, though Hussein himself was beyond help. Too stubborn to accept British advice, he was losing the battle for Arabia to his blood rival, Ibn Saud. Meanwhile Prince Faisal, Britain's preferred Arab ruler, remained in idle exile.

Other chief items on the Cairo agenda were the Ottoman territories running from the Persian Gulf to Turkey along the border of Persia, which make up present-day Iraq. Including what were suspected—but not proved—to be vast oil reserves, at a time when the value of oil was beginning to be understood, these territories had been the scene of the bloodiest postwar Arab uprisings against British rule. They caused so many difficulties of every sort that Churchill flirted with the idea of abandoning them entirely, but Lloyd George would have none of it. If the British left, the Prime Minister warned, in a year or two they might find that they had "handed over to the French and Americans some of the richest oil fields in the world."

As a matter of convenience, the British administered this troubled region as a unit, though it was composed of the three separate Ottoman provinces—Mosul, Baghdad and Basra, with their incompatible Kurdish, Assyrian Christian, Jewish, Sunni Muslim, and Shiite populations. In making it into a country, Churchill and his colleagues found it convenient to continue treating it as a single unit. (One British planner was warned by an American missionary, "You are flying in the face of four millenniums of history . . .") The country was called Iraq—"the well-rooted country"—in order to give it a name that was Arabic. Faisal was placed on the throne by the British, and like his brother Abdullah in Transjordan, he was supposed to keep Iraq quiet until the British were ready to police it with aircraft and armored cars.

One of the leftover problems in 1921 was just how to protect Transjordan's new governor, Abdullah, and Iraq's new king, Faisal, against the fierce warriors of Ibn Saud. In August 1922 Ibn Saud's camel-cavalry forces invading Transjordan were stopped outside Amman by British airplanes and armored cars. Earlier that year, the British forced Ibn Saud to accept a settlement aimed at protecting Iraq. With this in mind, the British drew a frontier line that awarded Iraq a substantial amount of territory claimed by Ibn Saud for Arabia: all the land (in what is now Iraq) west of the Euphrates River, all the way to the Syrian frontier. To compensate Ibn Saud's kingdom (later known as Saudi Arabia) the British transferred to it rights to two-thirds of the territory of Kuwait, which had been essentially independent for about two centuries. These were valuable grazing lands, in which oil might exist too.

It is this frontier line between Iraq, Kuwait and Arabia, drawn by a British civil servant in 1922 to protect Iraq at the expense of Kuwait, that Iraq's Saddam Hussein denounced as invalid when he invaded.

In 1922, Churchill succeeded in mapping out the Arab Middle East along lines suitable to the needs of the British civilian and military administrations. T. E. Lawrence would later brag that he, Churchill and a few others had designed the modern Middle East over dinner. Seventy years later, in the tense deliberations and confrontations of half the world over the same area, the question is whether the peoples of the Middle East are willing or able to continue living with that design.

British client in the balance-of-power struggle was Prince Faisal, shown with Lawrence (third from right), as head of the Arab delegation at Versailles in 1919. Made king of Syria, he was deposed. British then made him king of Iraq.

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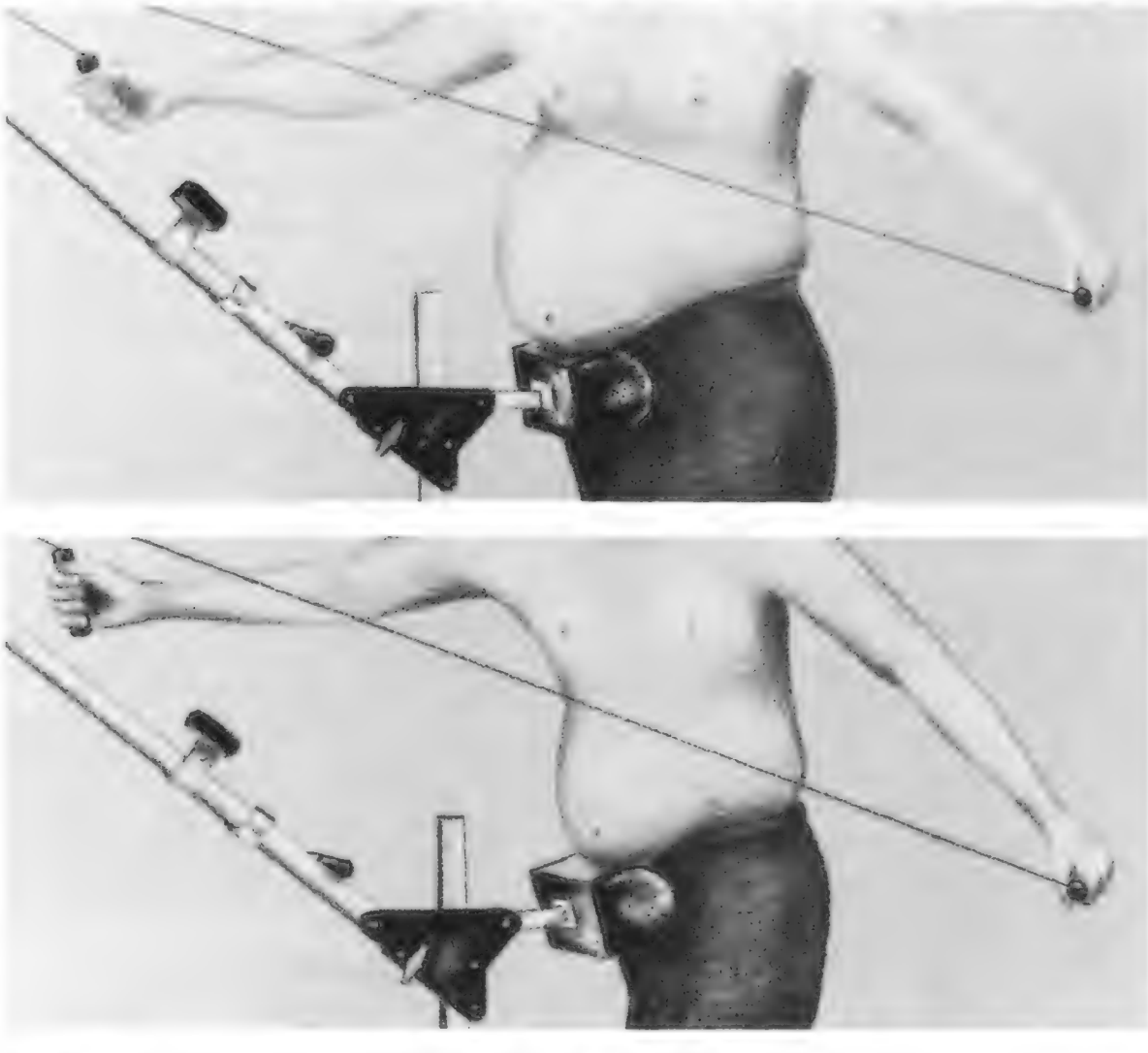

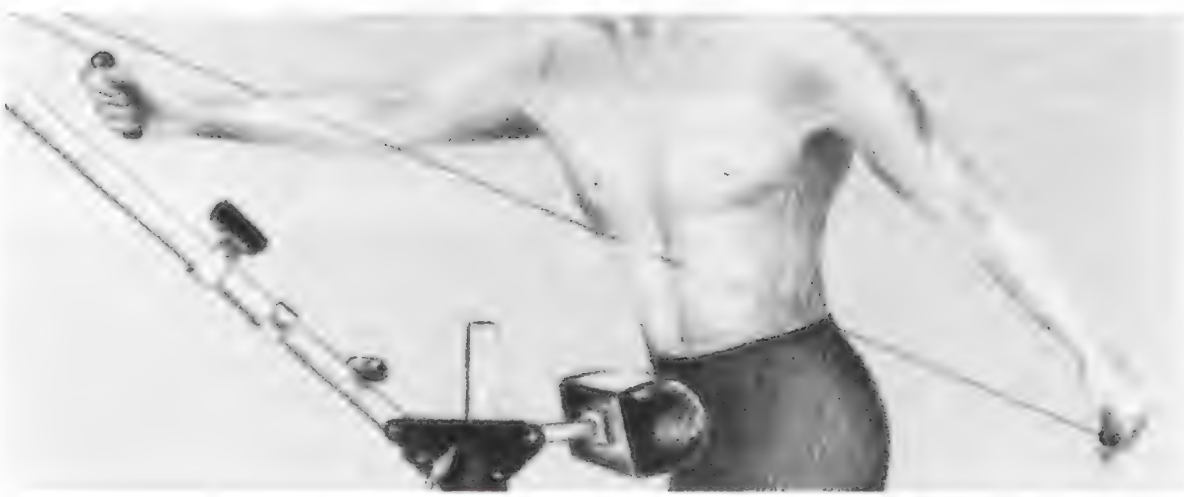

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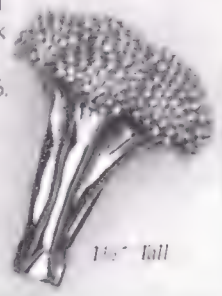

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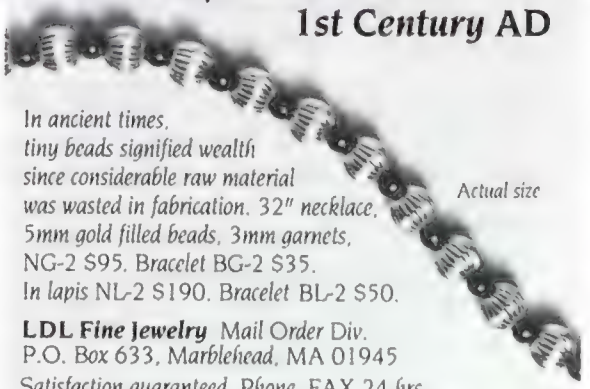

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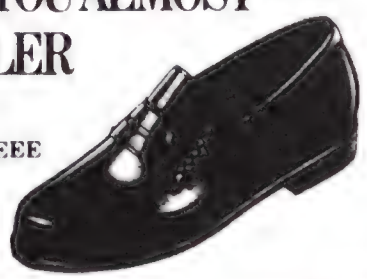

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The Search for the Pink-Headed Duck
Rory Nugent
Houghton Mifflin, $19.95

Now that winter is over, are you ready for a trip to northeastern India, to Sikkim, Assam and the deep, icy shadows of Earth's tallest mountains? American writer, explorer and ornithologist Rory Nugent will be our guide, for this isolated area is the home of the rare snow leopard, the Himalayan black bear, possibly the Abominable Snowman and—we hope—the pink-headed duck (*Rhodonessa caryophyllacea*). It hasn't been seen in the wild since 1935, but Nugent theorizes it's in hiding, not extinct.

Which is the best possible reason to go looking for it, according to Nugent, a man for whom improbable tasks seem forever undaunting. He is, after all, the explorer who went searching for dinosaurs in the Congo, the intrepid sailor who crossed the Atlantic single-handed four times, only to be shipwrecked and cast adrift the fifth. He had to be rescued by an Air Force crew (who share the dedication of this book with Nugent's editor), but he appears sufficiently qualified to lead this latest search. Or should we say sufficiently foolhardy?

The author begins his travel journal in Calcutta, which he suggests may be "the dirtiest metropolis on earth," and where "for every person living in a building, at least two people live on the streets." It is in this city's teeming fowl market that Nugent first looks for the long-unseen duck with the pink noggin, and where he is first scammed by enterprising street people who bring him common pochards, even a turtledove,

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with red dye or red paint still dripping from their heads.

Happily, the author has elected to tell his story in the present tense, an approach that renders escapades more immediate and tends to more deeply involve the reader. Leaving Calcutta, Nugent flies to the capital city of New Delhi, where he applies for an unrestricted Pan-India travel permit. The request is denied. Determined, he asks to travel the Tista and Brahmaputra rivers. No. Nugent quickly files an appeal and, while awaiting a decision, manages to get a 15-day pass to Sikkim, a tiny state located in the north between Nepal and Bhutan.

An attempt by assorted mystics and soldiers of fortune to smuggle the author across a strife-torn border into Tibet fails, whereupon he sets out, accompanied this time by only a donkey. If he fails to find his duck, perhaps he will come across the local yeti, Me-Gu by name. He gets himself lost in something called the Valley of Bliss and winds up in a rhododendron forest full of a giant species, "each as big as an American ranch house."

Nugent chose skiff for easy paddling, named it *Lahey-Lahey* ("Slowly-Slowly").

You will be reassured to know that throughout the trip Nugent never forgets to stop occasionally and give his pink-headed-duck call, which one of his Sikkimese friends likens to the cry of a "yak in pain."

Darjeeling next, a city that in the days of the British raj was known as "the queen of the hill stations." It is full of the scent of tea the day Nugent arrives. Ruling the horizon to the west looms Mount Everest, while down below, past the ghat, on the sun-splashed tables of the marketplace, stand colorful pyramids of mustard, red pepper, saffron and curry powder. The air is cool and dry, the wind calm—one would love to stay on.

But this is the home of the Gurkhas, a fierce people who are plotting independence from India. The streets are crowded with Gurkha women, who are free to curse and smoke and drink in public, and who wear whatever gold they own in nose rings and inlaid teeth. The men are turbaned, bearded giants (almost Nugent's size) who carry at their sashed waists wicked kukris, the traditional curved knives of the Gurkha warriors. The polished blades flash in the sunlight, the crowds surge forward, chanting "Long live Gurkhaland . . . Gurkhaland or death!"

Just as in Hollywood's old heart-in-the-throat adventure movies, fate intervenes, and our hero is saved from potential involvement. Despite the endemic indifference and delay of Indian bureaucracy, Nugent's much-revised

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permit finally comes through, and he is free at last to travel the Brahmaputra (but not the Tista)—the giant, storied river that flows like an inland sea from Burma to Bangladesh.

In his heart of hearts Nugent is a sailor, a lover of boats on water, for his narrative quickens once he makes his way to Assam and launches his 12-foot skiff into the mighty Brahmaputra. With an educated local named Shankar as guide and companion, Nugent becomes the first person to paddle this flood-besieged, crocodile-infested, pirate-haunted waterway to its mouth at the Bay of Bengal. Shankar had already found the trip impossible solo.

There's many a hold-your-breath adventure along the way, as you might expect, and all in the best tradition of travel books. For that's what this is, a book that has little to do with ducks and much to do with travel. Oh, Nugent spots a veritable kingdom of birds here and there—teal, mergansers, widgeons, grebes, spoonbills, even a rare white-winged wood duck—but does even one of them boast a pink head on top of its neck? Care to guess?

Nugent has assigned himself the hero's role in this exotic epic, and he deserves the billing. Tall, pale, bald-headed, he towers over the sometimes awed but always shorter natives "like a walking floor lamp." His story stops rather than ends; yet, with the photographs and the lively sense of drama, it's a lot of fun.

William Dieter
Denver novelist

Redcoats and Rebels: The American Revolution Through British Eyes
Christopher Hibbert
W. W. Norton, $29.95

Despite this book's subtitle, latter-day Loyalists seeking justification for the British policies of the Revolutionary era will have to look elsewhere. In fact, Hibbert's account is remarkably objective history, presenting British and American viewpoints with an evenhanded scholarship that should open many eyes on both sides of the Atlantic, especially those that have been closed to the great horrors, aside from the battles themselves, of the American Revolution.

Anyone of Scottish descent is well aware that the English army of the Hanoverian kings had a well-deserved reputation for butchery and brutality. What is not well known is that the American Colonists matched it in every way, atrocity for atrocity. Hibbert's documentation of the rape, pillage and torture inflicted upon Loyalists by their neighbors-turned-revolutionaries sheds light on a side of the war that has remained pretty much out of sight in previous histories. Indeed, the value of this book may lie in the unwritten conclusion that the American Revolution was, in fact, a bitterly ferocious civil war from which few emerged as "good guys."

In addition, both sides were, as Hibbert documents, incredibly careless and casual in their wartime operations. It is a wonder that the British won so many of the battles, and remarkable that the Americans won any. Gen. George Washington shared with Alfred the Great the problems that confronted a commander of farmers who seasonally deserted the front to work their crops; the British generals suffered (as British generals have throughout history) from

politicians niggardly with supplies and support of all sorts.

Hibbert enlivens his chronicle with vivid eyewitness accounts, some published for the first time, and with incisive character sketches—including a portrait, from an English newspaper, of a South Carolina clergyman reading the Declaration of Independence to his congregation, while a slave held a parasol over his head with one hand and fanned him with the other.

Many British newspapers supported the Colonists, but some must have pictured that clergyman as they derided Jefferson's high-flown phrases. *Gentleman's Magazine*, for example, wondered, "In what are [all men] created equal? Is it in size, strength, understanding, figure, moral or civil accomplishments, situation in life? . . . All men, it is true, are equally created, but what is this to the purpose? It certainly is no reason why the Americans should turn rebels." Others blamed their own government for the "accursed, cruel, unnatural, wicked American war, a war of injustice and moral depravity, marked by blood, slaughter, persecution and devastation."

If the British had problems with politicians who controlled the flow of matériel, the rebels did no better. One of Washington's most trusted officers, Nathanael Greene, resigned as quartermaster-general, saying that he had "lost all confidence in the justice and rectitude of the intentions of Congress" and protesting that "honest intentions and faithful services are but a poor shield against the machinations of men without principles, honour or modesty." *Plus ça change . . .*

Hibbert has given us the very first full-scale, popular history of the American Revolution by a British writer, as far as I can determine. It was not a conflict between blundering British generals and heroic American patriots, as the reader will discover. Hibbert demonstrates, quite entertainingly and compellingly, that it was a savage thing, condemned by thousands on both sides, which George Washington came perilously close to losing.

The British, for all their mistakes, rarely lost a tactical battle and might have carried the day at Yorktown had not the French, motivated by self-interest, stepped in then to help the Americans: "Before France's large-scale intervention, the rebels, so [Sir Henry] Clinton contended, had been losing heart and their army, ill-supplied and largely unpaid, had been on the verge of disintegration. This belief was not unfounded: American troops had mutinied in January 1781 and in April Washington had written despairingly, 'We are at the end of our tether . . . Now or never our deliverance must come.'"

The book has faults. They are not serious, but they are irritating in their misunderstanding of geography: a map showing the Susquehanna River running out somewhere in New Jersey rather than emptying into the Chesapeake Bay; descriptions of battles that place well-known historical sites in the wrong states. In a work otherwise so thoroughly researched, such errors, easy to avoid, have no place.

On the whole, however, *Redcoats and Rebels* is a lively tale that lures the reader through its pages much as a good novel does.

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Annapolis writer

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Additional reading

Cathars (p. 40)

Massacre at Montségur by Zoé Oldenbourg, Pantheon Books, 1962

The Albigensian Crusade by Jonathan Sumption, Faber and Faber, 1978

The Albigensian Crusade, An Historical Essay by Jacques Madaule, Fordham University Press, 1967

Montaillou, Cathars and Catholics in a French Village, 1294-1324 by Emmanuel Le Roy Ladurie, Scolar Press, 1978

Robert Rauschenberg (p. 54)

Rauschenberg/Art and Life by Mary Lynn Kotz, Harry N. Abrams, 1990

Off the Wall: Robert Rauschenberg and the Art World of Our Time by Calvin Tomkins, Doubleday, 1980

An Interview with Robert Rauschenberg by Barbara Rose, Vintage, 1987

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Pasta (p. 84)

"Pasta: Where It Came From and How It Got Here" by Corby Kummer, *Atlantic*, July 1986

Pastahhh (quarterly newsletter), National Pasta Association (Arlington, Virginia)

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p. 17: Chief Justice John Marshall meets Yogi Bear.

P. 17 takes you from Marshall's home in Richmond and Yogi's at Kings Dominion to the White House of the Confederacy and the battlefields of Petersburg. Then it's on to Manassas, Appomattox and the unforgettable caverns of western Virginia. Call us now for your free copy of our new full-color, 144-page travel guide. Or just write Virginia Division of Tourism, Dept. G561, Richmond, VA 23219.

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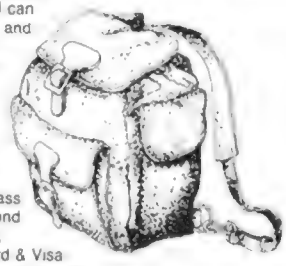

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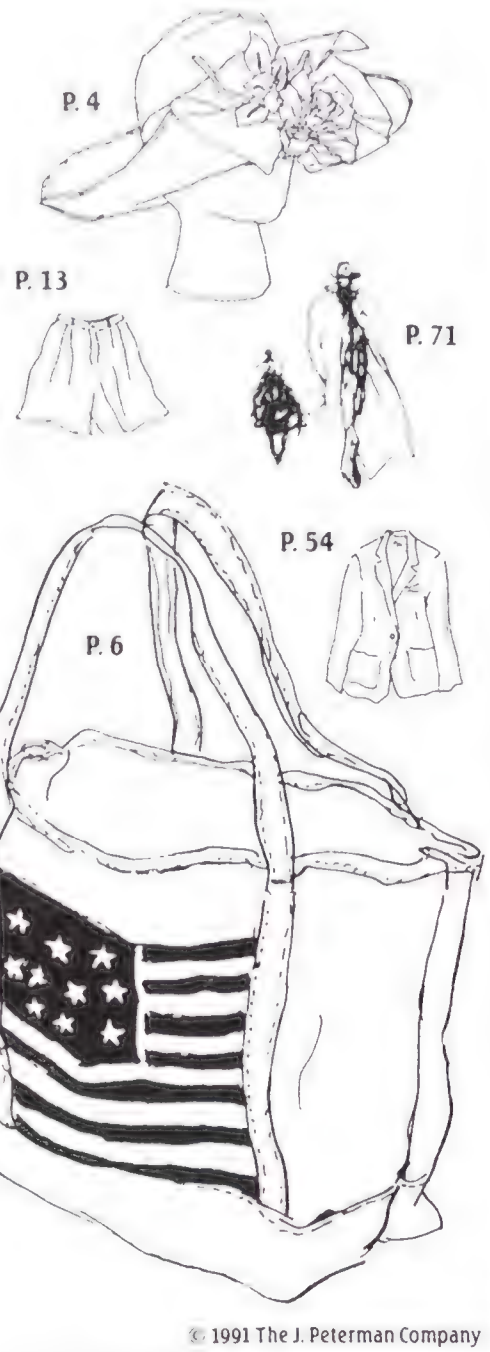

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Smithsonian highlights

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Extended summer hours

Starting Monday, June 17, through Labor Day, Monday, September 2, three Smithsonian museums will operate on extended hours daily from 9:30 A.M. to 7:30 P.M.: National Air and Space Museum, National Museum of American History and National Museum of Natural History.

Freer remains closed

The Freer Gallery of Art is closed until late 1992.

Special May exhibits and events

National Museum of American History
The Photographs of Arthur B. Rickerby: The UPI and Life *Years, 1941-1971* (April 8-June 28) A tribute to the 30-year career of the late photojournalist. See *Highlights continued*, page 160.
Westward to Promontory: Andrew J. Russell's Photographs of the Building of the Transcontinental Railroad, 1868-1869 (through June 30) Original prints document this engineering feat.
Nusantara: Lands and Peoples of Indonesia (through December 31) Rare books dating from the late 16th through 20th centuries.

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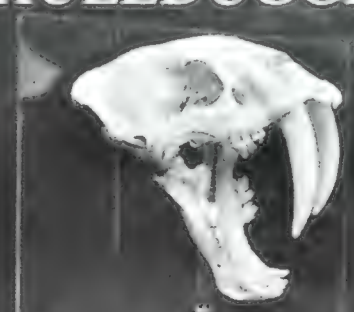

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National Museum of Natural History
Beyond the Java Sea: Art of Indonesia's Outer Islands (through July 14) More than 200 masterful works represent a survey and synthesis of the cultural life and thought of Indonesia's peoples.
Indonesian Village Worlds (through July 17) A photographic exploration of Indonesia by anthropologist Eric Crystal.

National Air and Space Museum
Art of the Cosmic Age (May 15-January 1992) Exhibition features 70 paintings, prints and sculptures by contemporary space artists from the United States, the Soviet Union and Canada.
Modern Carrier Aviation: Seapower in a Changing World (runs indefinitely) A look at technology's impact on the aircraft carrier.

National Museum of American Art
The West as America: Reinterpreting Images of the Frontier, 1820-1920 (through July 7) A critical look at the role of imagery in persuading people to move West.
Tokens of Affection: The Portrait Miniature in America (through June 16) More than 200 works from 1750 to 1850.

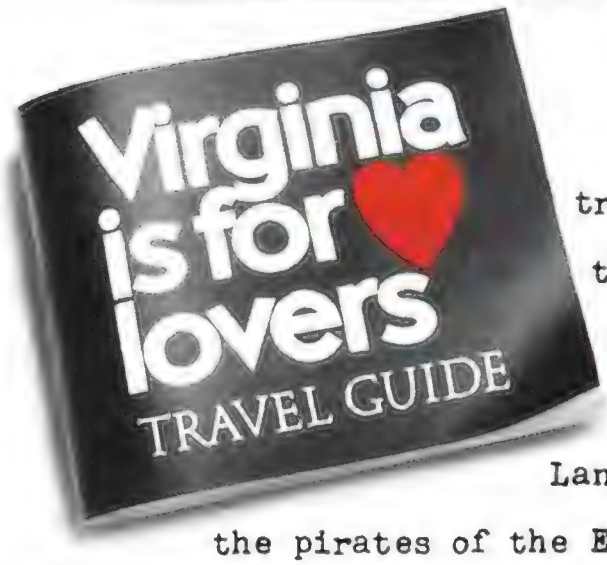
National Portrait Gallery
Group Portrait: The First American Avant-Garde (May 10-October 27) Art from the circles of Alfred Stieglitz, Marcel Duchamp, Gertrude Stein, Ezra Pound.
Recent Acquisitions (May 9-October 27)
Magical Mixtures: Marisol Portrait Sculpture (through August 11) First national exhibition devoted solely to the artist's portrait sculpture.

Hirshhorn Museum & Sculpture Garden
Ann Hamilton/Kathryn Clark WORKS (through June 23) Site-specific wax installation for the museum's windows.
Directions—Mike Kelley: Half a Man (through May 19) Everyday objects transformed by the Los Angeles-based artist.

Renwick Gallery
Lenore Tawney: A Retrospective (through July 21) Survey of the work of the pioneer fiber-artist.
Glassworks (through September 29) Site-specific installations of works by contemporary glass artists.

National Museum of African Art
African Reflections: Art from Northeastern Zaire (through January 12, 1992) The refined and delicate art of the peoples of northeastern Zaire.
Paramount Chiefs of Sierra Leone:

p. 9: See 18th century artisans produce barrels and baskets of fun.



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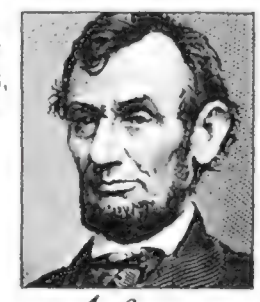
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Photographic Portraits by Vera Viditz-Ward (through September 2) Contemporary photographs from West Africa.

Cooper-Hewitt Museum (New York)
The Cooper-Hewitt Collections: A Design Resource (through August 31, 1992) Some 700 objects chronicle the history and collecting philosophy of one of the most important repositories of design.

National Museum of the American Indian (New York)
Indians as Children See Them (through June 2) Fourth annual juried art exhibition offers vivid interpretations of native-American cultures by students in New York City schools.

Arts and Industries Building Experimental Gallery
Brazil/New York Oxygen Share (through June 30) Installation by Brazilian artist Jonas dos Santos comments on the depletion of the Amazonian rain forest.
Casitas: An Urban Cultural Alternative (through June 30) Depicts *casitas*, a Caribbean architectural form.
Principles of Flight (through May 30) Hands-on interactive exhibit.

Arthur M. Sackler Gallery
Court Arts of Indonesia (May 19-September 2) Some 160 works reflect the traditions of the royal courts of Indonesia. Organized by the Asia Society, the show celebrates the Festival of Indonesia.
The Arts of China (runs indefinitely) More than 200 objects, including sculptures and paintings, span 6,000 years.

Exhibition catalogs

Catalogs available currently include:
Lenore Tawney: A Retrospective (paper, $27)
Beyond the Java Sea: Art of Indonesia's Outer Islands (paper, $29.95)
The West as America (paper, $35; cloth, $60)
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Folk Masters: A series of one-hour radio programs featuring award-winning performers of traditional music recorded live. Series is being aired on public radio stations nationwide. Check local listings.
Smithsonian World: "A Certain Age: A Celebration of Experience" will air May 8 at 8 P.M., EST. Show profiles a number of senior citizens in America and explores the special perspective that aging can bring. Check local PBS listings.

Smithsonian National Associates

Richmond, Virginia, will host a weekend of Smithsonian events May 16-19 in commemoration of International Museum Week. Activities will include lectures on Civil War photography, forensic anthropology and Thomas Jefferson.

For further information, write or call U.S. and International Events Program, 490 L'Enfant Plaza, S.W., Suite 4210, Washington, D.C. 20560; (202) 287-3210.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030. Here are some May events:
Politicians, Power, and the Pursuit of Office (May 16; 6 P.M.) Lecture by Alan Ehrenhalt, executive editor, *Governing*.
The Mel Lewis Jazz Orchestra (May 5; 7:30 P.M.) Noted for its fine sax section.
Wolfgang Amadeus Mozart: His Life and Times (May 4; 10 A.M.-4 P.M.) Seminar led by Dale Harris, lecturer at New York's Metropolitan Museum of Art.
The Ken Burns Film Series (May 9, 16, 23; 7 P.M.) The award-winning work of documentary filmmaker Ken Burns, producer-director of PBS' *The Civil War*.

Smithsonian Institution Traveling Exhibition Service

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Berkeley, California (May 4-July 28) *Inside Active Volcanoes: Kilauea and Mount St. Helens*, Lawrence Hall of Science.
Oshkosh, Wisconsin (May 11-June 30) *Great American Comics: 100 Years of Cartoon Art*, Paine Art Center and Arboretum.
Somerville, Massachusetts (May 11-June 23) *What Style Is It?*, Somerville Museum.

p. 25: Meet old fiddlers,
square dancers and one Hungry Mother.

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Highlights continued

He was a camera: the images of Arthur Rickerby

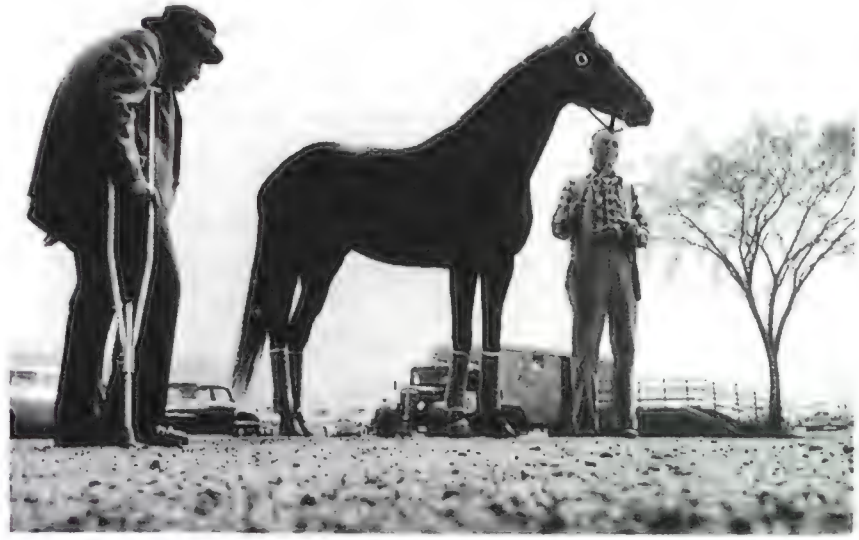
A native New Yorker, Rickerby sought in the 1950s to create pictures that captured city's special magic. This one was taken with Speed Graphic camera.

You are there. It's 1945 and the Japanese have surrendered. The war is over. Adm. William F. (Bull) Halsey leans forward to sign the final surrender documents aboard the USS *Missouri* in Tokyo Bay. You are there because Arthur Rickerby was there, at the right place, at the right time—the key, they say, to success in photojournalism.

It's 1947. Delegates John Foster Dulles and Eleanor Roosevelt attend the second session of the United Nations General Assembly. Arthur Rickerby records their intensity. In the fall of '56 Don Larsen hurls the last pitch of the first perfect game in World Series history. Arthur Rickerby catches the moment. Seven years later, an image of scattered roses in the backseat of an empty limousine embodies a nation's despair. Arthur Rickerby was there too that day in Dallas.

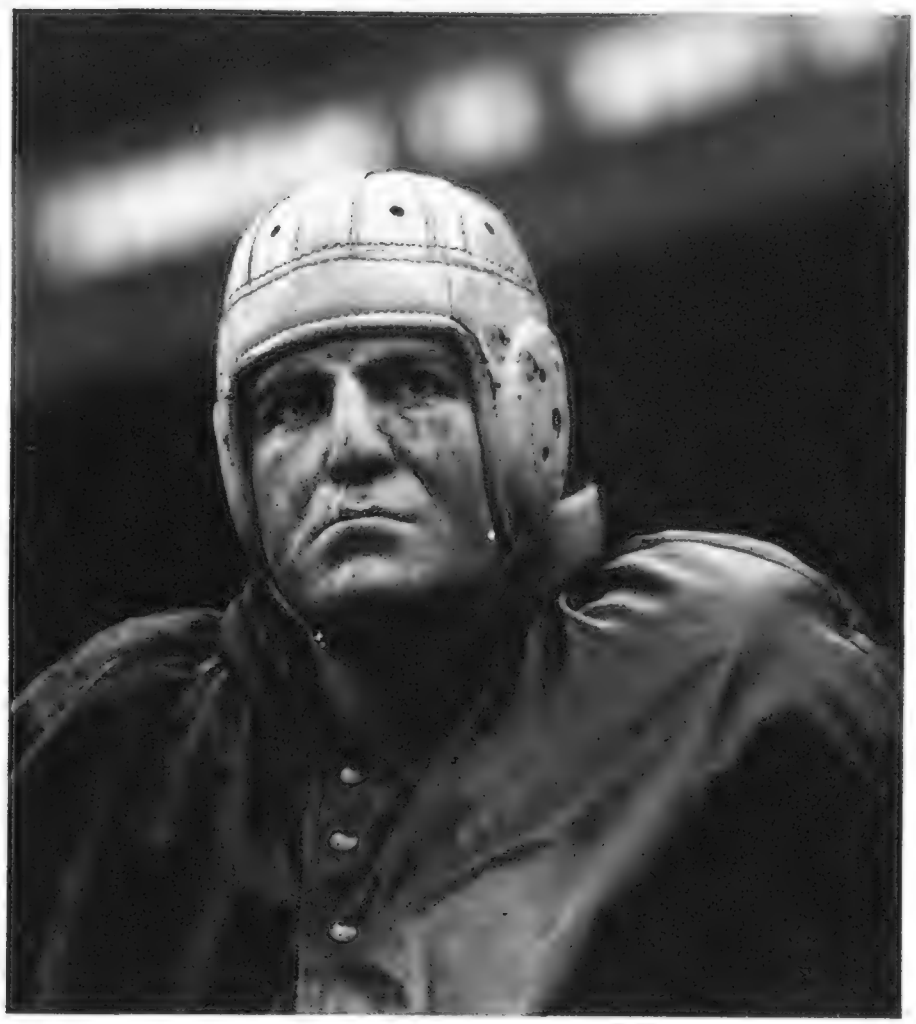
To most Americans, the images he produced are better known than the man himself. Working first as part of Capt. Edward Steichen's famed naval photographic unit during World War II, and later for United Press International (UPI) and then *Life*, Rickerby spent 30 years recording many of our nation's most precious moments. He covered an astonishing variety of subjects and events: from a missionary hospital deep in the jungle of Surinam to the 1968 Olympics in Grenoble. His instinct for the revealing moment and his empathy for all people enabled him to become one with his subjects. This was his gift.

Arthur Rickerby died suddenly in 1972, just as the weekly *Life* was closing down. His images endure as a living tribute to the power of his particular brand of photojournalism. "The Photographs of Arthur B. Rickerby: The UPI and *Life* Years 1941-1971," sponsored by Aetna Life and Casualty, will be on view at the National Museum of American History from April 8 till June 28.
Diane M. Bolz



Famed Nashua and trainer Sunny Jim Fitzsimmons stand silhouetted in twilight of their careers. *UPI, 1956*

Push and rush at Macy's in a price war is caught in this prizewinning photograph. *Acme Newspictures, 1951*

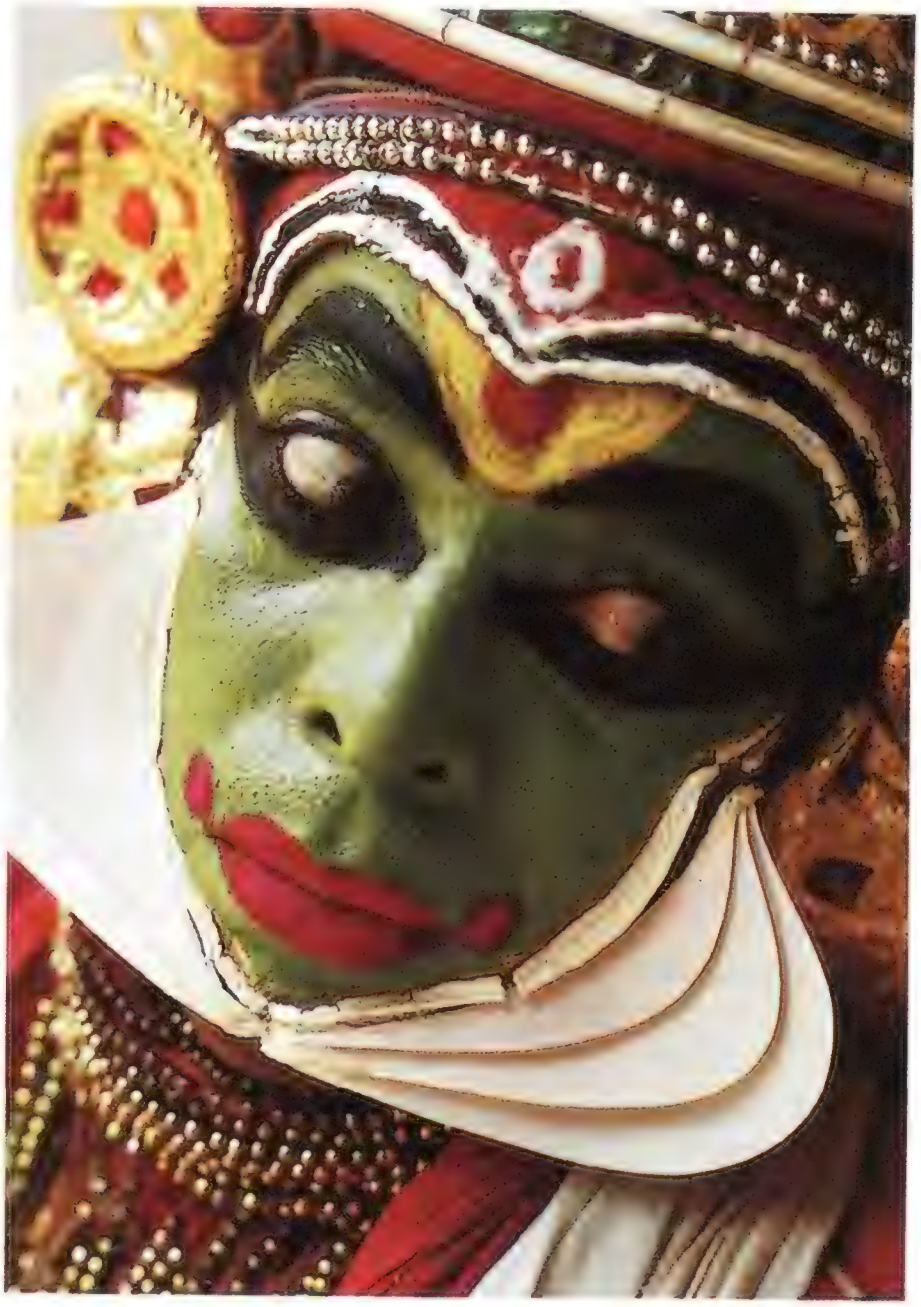


Anguish is personified in face of Pittsburgh Steeler as New York Giants make winning drive in 1948 season.

World-famous clown Emmett Kelly performs delicate balancing act in 1955. This was a Rickerby favorite.

John Foster Dulles and Eleanor Roosevelt listen intently to Russian accusations at U.N. General Assembly. *Acme Newspictures, 1947*

Picture of Kathakali dancer in southern India was taken to depict ceremonial use of rice paste for 1966 *Life* assignment on rice.



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Oregon *July 14-21* Natural, cultural history.

Salmon River (Idaho) *July 18-26*

Colorado for Families *July 20-26*

NEW Rogue River (Oregon) *July 23-29*

Alaska Landscapes *August 5-17*

Abbotsford Air Show *August 7-11* Seattle, Vancouver. Includes Boeing tour.

Nez Perce *August 10-18* Trail ride in Idaho.

Delta Queen *August 11-19* Upper Mississippi from Minneapolis to St. Louis.

Baseball Stadiums *August 15-21* Chicago, Detroit and Cleveland.

Lewis and Clark *August 18-25* Horseback camping on the 1805 trail in Idaho.

Waterton-Glacier *August 22-September 2* Hike in Montana and Canada.

Grand Canyon Rafting *August 23-September 1*

Arches and Canyonlands (Utah) *August 31-September 7*

Washington State *August 31-September 9* Hike Olympic and Mount Rainier National Parks.

Arizona Wildlife *September 4-12* Sonoran Desert and Chiricahua Mountains.

Maine Seascapes *September 7-14*

Sojourn in Sedona (Arizona) *September 12-18*

Atlantic Quest Cruise *September 13-30* Search for polar bears and whales in Canada's Atlantic Provinces.

California's Channel Islands *September 14-20*

New York: Ellis Island *September 19-22*

Columbia River Cruise *September 20-30*

Air and Space Museum: Behind the Scenes *September 22-25* For Contributing Members.

Grand Canyon Weekend *September 25-29*

Bryce, Zion and the North Rim *October 2-12*

Detroit Auto Barons *October 31-November 3*

Civil War: Eastern Theater *October 31-November 10* Visit Antietam, Gettysburg.

Foreign Study Tours

Countryside Tours *June-September* Relaxing sojourns in Italy, France, England, Switzerland, Austria, Wales or Germany.

Japan Cruise *May 19-June 3*

NEW Gardens with a French Flair *June 3-15* From Geneva to the Riviera.

Poland *June 7-20*

Dorset Walks (England) *June 13-24*

Zimbabwe-Botswana *June 13-30*

Inside Ireland *June 14-24*

Walks in the French Alps *June 16-29*

Trans-Siberian Railroad *June 19-July 6*

British Isles Cruise *June 23-July 9* Aboard the *Argonaut*.

Northern Landscapes—Impressionists in Paris and Normandy *June 24-July 3*

Hikes in Austria and Italy *June 25-July 9*

Scotland by Train *July 13-24*

Beyond the North Cape *July 22-August 8* Bergen-to-Spitsbergen cruise.

Kenya *August 1-17* Tent safari.

NEW Summer Island Pageant Cruise *August 5-21* From Madeira to Corsica.

USSR-Far East *August 17-31*

Tibet *August 18-September 6*

Switzerland by Train *August 22-September 3*

NEW Viking Cruise *August 29-September 16* Copenhagen-New York, *Seabourn Spirit*.

Russia's Golden Ring *September 1-15*

Medieval Jewels of the Midi (France) *September 2-14*

Hungary *September 5-19*

Indonesia *September 5-26*

NEW Battlefields of Europe *September 7-20* France, Belgium—from Napoleon to WWII.

Czechoslovakia *September 8-21*

Danube Cruise *September 9-26*

NEW Man and His Environment Cruise *September 10-23* From Amsterdam to Barcelona on the *Illiria*.

Himalayan Kingdoms *September 11-30* Bhutan, Ladakh and Nepal.

Classic China *September 12-October 2*

Southern Italy and Sicily *September 14-29*

Ireland Walks *September 15-26*

Gardens of Spain *September 17-28*

Australia-New Zealand *September 27-October 17*

United Germany *October 3-14*

Smithsonian Seminars

Join top scholars for classroom study and tours. Courses are held in Washington, D.C. unless otherwise indicated.

NEW Air Force History *June 12-15* Wright-Patterson Air Force Base, Ohio.

NEW American Impressionists in Connecticut *June 19-23 or September 11-15*

Bali (Indonesia) *June 25-July 9*

Kenya *July 1-18*

Write to Smithsonian National Associate Program, Washington, DC 20560 or call (202) 357-4700 for tour and seminar brochures.

SMITHSONIAN-STYLE

The New Europe (France) *July 9-20*

Hawaii's Active Volcanoes *August 4-8 or August 11-15* Hilo, Hawaii.

Trinity College (Dublin) *August 9-22*

Oxford (England) *September 14-28*

Chesapeake Ecology *September 16-20* Annapolis, Maryland.

Creative Writing, *September 16-20* Annapolis, Maryland.

Riviera Art (France) *September 17-27*

Aircraft Restoration *September 23-26*

Rome Seminar *October 9-21*

Research Expeditions

Contribute your talent and financial resources to Smithsonian research. Work with curators at museums or in the field.

Washington, D.C. *May 21-31* Survey sculpture.

Washington, D.C. *June 16-29 or June 30-July 13* Inventory native-American collections.

Washington, D.C. *June 23-July 6* Teachers: curriculum project at the Air and Space Museum.

Front Royal, Virginia *July 6-14* Study wildlife vegetation in the Shenandoah Valley.

Costa Rica *July 6-18 or September 29-October 11* Monitor volcanism, collect plants.

Fort Ross, California *July 7-14* Excavate a Russian fur-trade settlement.

Pierce, Idaho *July 14-24* Interview loggers.

NEW Jamaica *July 15-27* Record the East Indian festival Hosay.

Washington, D.C. *July 21-August 3* Archive aviation and aerospace documents.

Washington, D.C. *July 21-27 or October 27-November 2* Work on a videodisk project.

Crow Agency, Montana *August 14-20* Document the annual Crow Fair.

Orofino, Idaho *September 17-27* Document Lumberjack Days.

(202) 287-3210 for expedition brochures.

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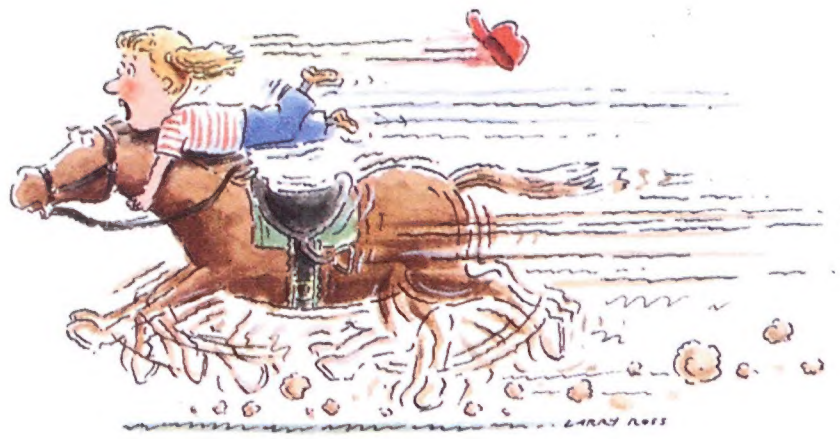
By Elaine Segal

Horsing around with Skip (née Elaine)



Call me Elaine. The idea to be somebody else first came to me at bedtime on a humid evening in 1956. In those days, my overbite was already so pronounced that when I kissed you goodnight, I'd leave a little toothmark on your cheek. "Ouch!" cried my grandfather and drew me near. "Listen," he growled, "if you keep up this thumbsucking you'll look like Bugs Bunny in no time. Is that what you want?" "Yes," I said.

Woe to the child who has ambitions to become a cartoon, for by the time she decides she would rather be Annie Oakley—the better to gallop far away from the boys bellowing "What's up, Doc?"—it will be too late. She will be hindered by the bulk of her cello, which she is lugging to orchestra practice.

Why the cello, you may ask, when it is clear that if Annie Oakley had played an instrument, it would have been a bugle? I will relate: a person with buckteeth instinctively avoids horns of all kinds. My parents, who were alarmed by the spectacle of my upper lip, which on account of my teeth stuck straight out of my face like a beak, urged me to take up the flute in order to train my lip to point toward the instrument's silver blowhole, thereby correcting the infirmity of my profile. "The flute will make you pretty," said my mother.

But I knew it would take more than a flute to transform me from the wretched creature the kids called "Pinlegs," "Four Eyes," "Bucky Beaver" and "Bugs." No, it wasn't a flute that I wanted, it was a horse. As I streaked by on my powerful mount, my inadequacies would blur and never be noticed. But we were a bookish family, and riding lessons were out of the question. And so, I took up the cello, that most horselike of instruments, in the belief that its massive form would lend credibility to my cartoonlike appearance and improve my life.

It was an odd scheme and it backfired. An underweight child with buckteeth, pink glasses and a pixie cut, staggering under the weight of a cello, is everyone's natural prey. I cursed the cello that knocked against my body as I hauled it through the avenue, and it cursed me back. I vowed to kill it, and it mocked my empty threats, knowing, as I did, that my parents would kill me if I so much as scratched its varnish.

Although I was too upset to notice, the seasons changed, and suddenly I was sitting next to my sister on a bus to summer camp. It was on that bus that I took off my glasses and put on my new identity. "When we get to camp, don't call me 'Elaine,' " I told my sister, "call me 'Skip.' " "Elaine, that's not a Jewish name," my sister said solemnly.

When my name was called, my voice trembled when I claimed that everybody called me Skip, but I got away with it. As it happened, my cabin, Pequod, housed girls as shady as myself who claimed that everybody called them Lefty, Shorty, Flip, Zip-Zip and Big Al.

By the second day of camp Elaine had completely disappeared into the deep recesses of Skip, who fearlessly jumped into the deep end of the swimming pool although she could not swim, shot her arrow straight into the bull's-eye although she could not see without her glasses, and sang around the campfire at the top of her lungs although she did not know the words. So it was not surprising that when the ruggedly handsome teenage ranchhand whom everybody called "Slim" asked Skip if she thought she could handle Peanuts, the stable's most difficult horse, Skip said "Yep," even though she had never touched a saddle.

It is a rare and almost unheard of event when reality exceeds the expectations of one's fantasy, but that is what happened when I got on that horse. I felt like Peanuts and I had been riding together forever; in fact, in many ways Peanuts was a lot like Elaine. She was smaller than the other horses and didn't seem to get along with them very well. As we ambled onto the trail, Shorty's horse tried to bite Peanuts and shoved ahead of us in line. I leaned over to give Peanuts a consoling pat on her neck, and just then Shorty's horse kicked Peanuts in the snout. Suddenly I felt an exhilarating lift followed by a jolt, as I pitched forward onto the neck of my horse, who was now tearing down the trail at a speed that I immediately identified as insane. My mind cleared in an instant and all that was left was one towering choice: cling or die.

No animal in the whole, clinging animal kingdom has ever clung to another animal as I clung to that horse. I am sure that Peanuts and I carried around a layer of each other's molecules for days after that ride, which ended when we were headed off by Slim and his horse, Midnight. Slim was the strong, silent type and after saying "Whoa, Peanuts," said nothing else on the long, slow ride back. I slumped in my saddle and became Elaine again. I knew the jig was up—I would be kicked out of the camp for having lied about my horsemanship, my name and my claim that "100 Bottles of Beer on the Wall" had been written by my grandfather.

When Slim led Peanuts back to her place behind Shorty's horse, she reared again, but I was too depressed to fall off and sat stoically, waiting to be yelled at. "Cool it, Peanuts," said Slim, and then he fixed his eyes on me. They were blue and bottomless. I cringed. "You're a regular Annie Oakley, aren't you, Skip?" he said. And as life reentered my body, I grinned my bucky grin and said, "Everybody calls me Skip, but you can call me Elaine."

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